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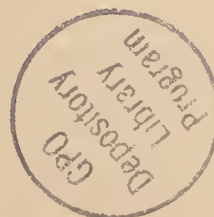
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# Guide To Wheat Hardness

## 1989 Crop Year



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## Abstract

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This is the second survey in a series of annual wheat hardness surveys. Near-infrared reflectance spectra were measured on more than 1,800 wheat samples representing over 150 varieties grown in 17 States during 1989. Hardness and protein content were determined from spectral analyses and are reported in this survey in various table formats. Hardness was shown to be affected by growing location, wheat class, and variety. At best, a weak relationship exists between hardness and protein content. The intention of introducing a standard definition for wheat hardness is to establish a mechanism for improving the objectivity of wheat classification.

**Keywords:** near-infrared reflectance, wheat, wheat classification, wheat hardness, wheat protein.

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# GUIDE TO WHEAT HARDNESS

1989 Crop Year

Stephen R. Delwiche

## Introduction

Wheat grown in the United States falls into seven basic classes—hard red spring (HRS), hard red winter (HRW), soft red winter (SRW), white (HWW, SWW, or club), mixed (Mix), durum, and unclassified. Hard wheats tend to be higher in protein than soft wheats, and are used in breadmaking. Soft wheats are better suited for cakes, crackers, and pastries. Durum wheats, being the hardest of all, are used to produce pasta. Wheat class, a component of the U.S. Standard, is determined according to kernel morphology (i.e. size, shape, color, crease appearance). The continual release of new varieties, cross breeding, and expansion of each variety's growing area have all complicated the task of correctly classifying wheat.

The development of grain standards in the United States has its origin in the late 1800's when various groups of the grain industry (grain terminals, trading companies, millers, and end processors) recognized the potential benefit of standardization. Following years of debate regarding the need for Federal grain standards, the U.S. Congress passed the United States Grain Standards Act (USGSA) in 1916. At the time, the primary objective for invoking grain standards was to facilitate marketing, with little attention paid to end-use quality

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Special thanks are extended to Rollie Sears of Kansas State University and Joe Hampton of the Enid Board of Trade for sample collection, to Aarion Johnson of FGIS for sample cleaning, and to Joyce Shaffer of ARS for sample analysis.

(U.S. Congress, Office of Technology Assessment 1989). Though amendments to the 1916 act were passed in subsequent years, the impetus for standards remained the same until the passing of the Grain Quality Improvement Act of 1986 (Public Law 99-641). With passage of this act, four objectives of grain standards were established. One of these is to provide end-users with the best possible information on finished-product quality. Wheat hardness is one parameter that contributes to providing such information.

Though wheat hardness has historically been used to imply milling properties (e.g. efficiency, resistance to break, reduction requirements), a full understanding is lacking. Hardness has also been used to imply end-use properties, such as whether a flour will make a better bread or cake. Relating hardness to protein, lipid, mineral, and starch structure and, in turn, to baking quality is still a goal of the future. In an attempt to standardize the definition for wheat hardness, Norris in 1986 defined hardness in terms of near-infrared (NIR) reflectance measurements (Norris et al. 1989). Because light impinging on larger particles is more highly absorbed than that impinging on smaller particles, diffuse reflectance spectroscopy can be used to distinguish between a wheat that breaks into large fragments from one that forms small fragments. Hard wheats produce larger particles when ground than soft wheats, thus permitting the quantification of hardness by NIR reflectance. A wheat hardness definition based upon NIR reflectance was approved by the American Association of Cereal Chemists in 1986 (AACC 1986).

This report presents the second in a series of hardness surveys. Though patterned after the first report (Slaughter 1989), the current report includes NIR protein values and additional tables.

## Procedure

Two sets of wheat samples were collected. The first set consisted of 806



samples grown in 16 States and drawn from commercial channels. Varietal identification was made by the farmer at time of delivery to the local grain elevator. The second set was amassed from wheat breeders' variety trials. This set consisted of 1,027 samples grown in 10 States. Prior to NIR measurements, all samples were cleaned by the Federal Grain Inspection Service (FGIS) to remove dockage and shrunken/broken kernels.

Approximately 15 g of each sample was ground using a Udy cyclone grinder (Ft. Collins, CO, Model 3010-018) equipped with a 1-mm screen. A nylon ring of 38-mm internal diameter and 8-mm depth was loosely filled with 3 to 5 g of the ground sample, and capped with an infrared transmitting quartz window of 1.27-mm thickness. Diffuse reflectance readings (1100–2498 nm) were gathered using an NIR Systems (Silver Spring, MD) Model 6500 spectrophotometer equipped with a rotating cell. A ceramic disk was the reflectance reference. Each sample's spectrum was the average of 32 repetitive scans.

NIR hardness calculations were performed according to AACC procedures (AACC 1986). Hardness is based on an empirical (dimensionless) scale and generally ranges from about 10 (very soft) to 110 (very hard). Five soft and ten hard varieties form a hardness reference set maintained by FGIS, and the soft and hard varieties have been assigned the hardness values of 25 and 75, respectively. For the present survey, wheat from the reference set formed a standardization set consisting of five subsamples per variety. Using the two-term model of Norris et al. (1989, equation 3) and applying a slope and bias correction (AACC, 1986), the NIR hardness equation became

$$\begin{aligned} \text{HRD.} = & 186.36 \\ & - 1023.41(\log(1/R))_{1680\text{nm}} \\ & + 1373.49(\log(1/R))_{2230\text{nm}} \end{aligned}$$

The repeatability of this model, as indicated by the average of the standard deviations of the predicted hardness scores from each five-subsample group (15 groups total), was 3.

The spectrophotometer was standardized for protein content, based on a four-term model currently used by FGIS for official inspection. A reference set consisting of five samples each of HRW and HRS wheats and having an overall range in protein content of 10.8 to 16.6% was obtained from FGIS in 1987. Each sample's protein value was the average of 49 separate Kjeldahl measurements. Repeatability (i.e. std. dev.) of the Kjeldahl measurements averaged 0.14% protein. Three subsamples per sample formed the standardization set for the present study. After slope and bias adjustment, the NIR protein equation, which calculates percentage of protein in wheat at 12% moisture content (MC), became

$$\begin{aligned} \text{PRO.} = & 12.69 \\ & + 416.7(\log(1/R))_{2180\text{nm}} \\ & - 318.8(\log(1/R))_{2100\text{nm}} \\ & + 14.35(\log(1/R))_{1940\text{nm}} \\ & - 165.1(\log(1/R))_{1680\text{nm}} \end{aligned}$$

Repeatability (i.e. std. dev.) of the model averaged 0.18% protein. The accuracy of the calibration was indicated by the standard error of calibration (SEC), defined as

$$\text{SEC} = \sqrt{\frac{1}{M - 1 - k} \sum_{i=1}^M (Y_i - X_i)^2},$$

where  $Y_i$  and  $X_i$  are the NIR and Kjeldahl values, respectively;  $M$  is the number of spectra in the calibration set (30 in this case); and  $k$  is the number of variables in the regression model (4 in this case). The calculated SEC was 0.24% protein.

## Results

NIR hardness and protein contents are listed for the commercial and breeder's wheat samples by growing region within State (**LOC.**) in tables 1 and 2, by wheat variety (**VAR.**) in tables 3 and 4, and by hardness (**HRD.**) in tables 5 and 6. In all tables, blanks in the class column identify the unclassified wheats.

The final two tables list hardness and protein contents for the combined commercial and breeders' samples: table 7 by variety and table 8 by class within State. The abbreviations **N** and **STD.** represent the number of samples and standard deviation (of protein or hardness), respectively.

## Discussion

Tables 1, 2, and 8 show a general trend of hardness increasing with increasing latitude. For example, HRW wheats grown in Oklahoma had an average hardness of 59 (N=229), while those of Kansas and Nebraska averaged 65 (N=534) and 68 (N=135), respectively.

Tables 5 and 6 show that hardness scores of soft wheats tended to be less than 40 while those of hard wheats generally ranged from 40 to 120. Additionally, these tables suggest that protein content increases with increasing hardness scores. However, a well-defined relationship between hardness and protein is nonexistent. Table 7 shows that Siouxland grown in Kansas had the same average hardness (69, N=9) as that grown in Nebraska (69, N=10) but averaged 0.7 percentage points (or 5%) higher in protein than the Nebraska set. The reverse trend occurred with Tam-107 grown in these two States. The Nebraska set (N=11) averaged 0.9 percentage points (or 7%) higher in protein than the Kansas set (N=19) despite the near equality of average hardnesses (78 and 80, respectively). These results for Siouxland and Tam-107 point out the importance of both genetic and environmental effects when considering quality.

Spring wheats tended to be harder than winter wheats. For example, HRS wheats from California (table 8) had an average hardness of 83 (N=46) while HRW wheats from the same State had an average hardness of 78 (N=26). (A t-test confirmed that these means were significantly different at  $\alpha=0.05$ .)

Two notes of caution are warranted when interpreting the values in this survey: (1) Individual sample hardness scores that differ by less than 3 cannot be considered as statistically significant; (2) variation among growing practices, local weather patterns, and soil type can cause a wheat variety within a growing region to demonstrate widely varying hardness and protein values.

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- U.S. Congress, Office of Technology Assessment. 1989. Enhancing the quality of U.S. grain for international trade. OTA-F-399. U.S. Government Printing Office, Washington, D.C.



TABLE 1. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY LOC.

STATE	REGION	ZIPCODE	VARIETY	CLASS	PRO.	HRD.
CA	Bakersfield	93389	Yecora-Rojo	HRW	15.5	70
CA	Bakersfield	93311	Yecora-Rojo	HRW	12.1	72
CA	Corcoran	93212	Yecora-Rojo	HRW	13.2	81
CA	Corcoran	93212	Yecora-Rojo	HRW	13.2	86
CA	Dos-Palos	93620	Anza	HRW	16.2	80
CA	Firebaugh	93622	Yecora-Rojo	HRW	12.9	80
CA	Goshen	93227	Yecora-Rojo	HRW	13.5	70
CA	Goshen	93227	Yecora-Rojo	HRW	12.2	70
CA	Lemoore	93245	Yecora-Rojo	HRW	14.2	80
CA	Los-Banos	93635	Stokay	HRW	12.9	86
CA	McFarland	93250	Yecora-Rojo	HRW	13.1	71
CA	Merced	95340	Klasic	HWW	12.2	51
CA	Sacramento	95835	White-130		13.6	64
CA	Stockton	95201	Anza	HRW	11.3	58
CA	Stockton	95208	Anza	HRW	12.7	73
CA	Stockton	95208	Anza	HRW	12.9	75
CA	Stockton	95201	Anza	HRW	10.8	85
CA	Stockton	95208	Anza-Hi	HRW	11.2	84
CA	Stockton	95207	Klasic	HWW	13.0	51
CA	Stockton	95204	YR-Hi		14.1	75
CA	Stockton	95208	Yolo	HRW	9.6	75
CA	Stockton	95208	Yolo	HRW	9.9	76
CA	Williams	95987	Anza	HRW	12.3	80
CA	Williams	95987	Klasic	HWW	12.3	68
CA	Williams	95987	Tadinia	HRS	12.3	80
CA	Williams	95987	Yolo	HRW	10.2	67
CA	Woodland	95695	Anza	HRW	11.4	82
ID	Cataldo	83810	Hill-81	SWW	11.0	16
ID	Craigmont	83523	Hill	SWW	10.6	31
ID	Craigmont	83523	Hyslop	SWW	9.7	19
ID	Craigmont	83523	Stephens	SWW	10.7	27
ID	Craigmont	83523	Stephens	SWW	11.9	32
ID	Craigmont	83523	Stephens	SWW	10.8	39
ID	Culdesac	83524	Edwall	SWW	9.9	26
ID	Culdesac	83524	Stephens	SWW	10.9	29
ID	Culdesac	83524	Stephens	SWW	10.8	32
ID	Ferdinand	83526	Waverly	SWW	10.0	30
ID	Filer	83328	Stephens	SWW	11.8	25
ID	Genesee	83832	Hill	SWW	11.4	32
ID	Genesee	83832	Stephens	SWW	11.2	20
ID	Genesee	83832	Stephens	SWW	11.2	25
ID	Genesee	83832	Stephens	SWW	10.6	26
ID	Genesee	83832	Stephens	SWW	11.7	26
ID	Genesee	83832	Stephens	SWW	11.9	26
ID	Genesee	83832	Stephens	SWW	11.4	28
ID	Genesee	83832	Stephens	SWW	11.2	29
ID	Genesee	83832	Stephens	SWW	11.2	29
ID	Genesee	83832	Stephens	SWW	11.2	30
ID	Grangeville	83530	Daws	SWW	9.1	31
ID	Grangeville	83530	Dusty	SWW	9.5	11
ID	Grangeville	83530	Dusty-Stephens	Mix	10.3	25



**TABLE 1. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY LOC.**

STATE	REGION	ZIPCODE	VARIETY	CLASS	PRO.	HRD.
ID	Grangeville	83530	Hill-81	SWW	10.0	31
ID	Grangeville	83530	Hill-81	SWW	9.8	35
ID	Grangeville	83530	Tres	Club	10.5	33
ID	Greencreek	83533	Stephens	SWW	9.5	24
ID	Lenore	83541	Lewjain	SWW	9.7	25
ID	Lenore	83541	Stephens	SWW	9.9	23
ID	Meridian	83642	Stephens	SWW	10.4	27
ID	Mountain-Home	83647	Stephens	SWW	11.4	21
ID	Mountain-Home	83647	Stephens	SWW	11.2	25
ID	Mountain-Home	83647	Stephens	SWW	10.9	32
ID	Nezperce	83543	Hill-81	SWW	10.8	27
ID	Nezperce	83543	Hill-81	SWW	10.5	35
ID	Nezperce	83543	Lewjain	SWW	8.5	21
ID	Nezperce	83543	Lewjain	SWW	12.2	23
ID	Nezperce	83543	Lewjain	SWW	8.8	23
ID	Nezperce	83543	Stephens	SWW	10.5	18
ID	Nezperce	83543	Stephens	SWW	10.5	18
ID	Nezperce	83543	Stephens	SWW	13.9	22
ID	Nezperce	83543	Stephens	SWW	10.9	27
ID	Nezperce	83543	Stephens	SWW	11.2	28
ID	Plummer	83851	Tres	Club	9.2	14
ID	Power-Co	83211	Stephens	SWW	11.2	26
ID	Rexburg	83440	Bliss	SWW	10.9	25
ID	Rexburg	83440	Penawawa	SWW	11.3	19
ID	Tensed	83870	Basin-Fall	SWW	10.5	6
ID	Tensed	83870	Hill-81	SWW	10.6	24
ID	Tensed	83870	Owens	SWW	10.7	15
ID	Worley	83876	Edwall	SWW	10.3	16
ID	Worley	83876	Edwall	SWW	10.4	19
ID	Worley	83876	Edwall	SWW	10.0	20
ID	Worley	83876	Hill-81	SWW	12.3	30
ID	Worley	83876	Waverly-Hill-81	Mix	11.7	21
KS	Atlanta	67008	Arkan	HRW	13.1	51
KS	Atlanta	67008	Arkan	HRW	14.5	55
KS	Attica	67009	Arkan	HRW	12.6	41
KS	Attica	67009	Arkan	HRW	12.6	42
KS	Burden	67019	Arkan	HRW	11.8	46
KS	Burden	67019	Mesa	HRW	10.6	44
KS	Burden	67019	Mesa	HRW	13.3	49
KS	Burden	67019	Victory	HRW	10.7	51
KS	Burlingame	66413	Abilene	HRW	13.9	62
KS	Burlingame	66413	Arkan	HRW	15.5	55
KS	Burlingame	66413	Siouxland	HRW	15.9	73
KS	Burlingame	66413	Victory	HRW	15.0	52
KS	Burlingame	66413	Victory	HRW	14.7	73
KS	Clay-Center	67432	Arkan	HRW	16.0	60
KS	Clay-Center	67432	Arkan	HRW	15.4	68
KS	Clay-Center	67432	Newton	HRW	13.2	54
KS	Clay-Center	67432	Thunderbird	HRW	16.8	71
KS	Clay-Center	67432	Victory	HRW	15.3	68
KS	Clay-Center	67432	Victory	HRW	15.8	70

TABLE 1. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY LOC.

STATE	REGION	ZIPCODE	VARIETY	CLASS	PRO.	HRD.
KS	Clay-Center	67432	Victory	HRW	15.6	77
KS	Colby	67701	Eagle	HRW	11.2	65
KS	Colby	67701	Hawk	HRW	12.2	81
KS	Colby	67701	Larned	HRW	13.1	53
KS	Colby	67701	Larned	HRW	12.1	67
KS	Colby	67701	Mesa	HRW	13.1	69
KS	Colby	67701	Newton	HRW	13.3	59
KS	Colby	67701	Newton	HRW	12.5	73
KS	Colby	67701	Newton	HRW	13.1	74
KS	Colby	67701	Tam-107	HRW	13.1	74
KS	Colby	67701	Tam-107	HRW	12.8	83
KS	Delia	66418	Arkan	HRW	12.7	62
KS	Erie	66733	Arkan	HRW	12.1	41
KS	Erie	66733	Arkan	HRW	13.0	45
KS	Erie	66733	Caldwell	SRW	11.0	10
KS	Erie	66733	Caldwell	SRW	11.3	14
KS	Erie	66733	Caldwell	SRW	9.6	15
KS	Erie	66733	Newton	HRW	9.9	32
KS	Erie	66733	Pioneer-2551	SWW	13.4	22
KS	Erie	66733	Tam-107	HRW	10.3	55
KS	Hardtner	67057	Beordless		11.4	63
KS	Hardtner	67057	Chisholm	HRW	13.4	48
KS	Hardtner	67057	Trailblazer	HRW	13.5	67
KS	Harveyville	66431	Arkan	HRW	15.7	67
KS	Harveyville	66431	Victory	HRW	13.0	58
KS	Hays	67601	Eagle	HRW	13.6	78
KS	Hays	67601	Larned	HRW	9.8	69
KS	Hays	67601	Mustang	HRW	15.5	99
KS	Hays	67601	Newton	HRW	14.1	70
KS	Hays	67601	Newton	HRW	16.0	74
KS	Hays	67601	Newton	HRW	15.3	82
KS	Hays	67601	Pioneer-2157	HRW	15.1	59
KS	Hays	67601	Tam-107	HRW	12.3	92
KS	Hays	67601	Tam-107	HRW	14.0	94
KS	Hays	67601	Tam-107	HRW	13.1	99
KS	Hiawatha	66434	Abilene	HRW	13.6	73
KS	Hiawatha	66434	Arkan	HRW	14.3	78
KS	Hiawatha	66434	Newton	HRW	14.5	72
KS	Hiawatha	66434	Newton	HRW	13.3	84
KS	Hiawatha	66434	Norkan	HRW	12.9	65
KS	Johnson	67855	Newton	HRW	13.0	57
KS	Johnson	67855	Newton	HRW	13.5	59
KS	Johnson	67855	Shawnee-Tam-107	Mix	12.0	82
KS	Johnson	67855	Tam-107	HRW	12.2	89
KS	Leoti	67861	Hawk	HRW	11.4	50
KS	Leoti	67861	Newton	HRW	11.9	55
KS	Natoma	67651	Larned	HRW	15.4	81
KS	Natoma	67651	Newton	HRW	16.0	74
KS	Natoma	67651	Tam-107	HRW	13.5	80
KS	Osage-City	66523	Thunderbird	HRW	14.4	64
KS	Osage-City	66523	Thunderbird	HRW	15.6	68

TABLE 1. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY LOC.

STATE	REGION	ZIPCODE	VARIETY	CLASS	PRO.	HRD.
KS	Osage-City	66523	Victory	HRW	14.2	66
KS	Parsons	67357	Caldwell	SRW	11.3	14
KS	Pauline	66619	Arkan	HRW	14.9	62
KS	Pauline	66619	Victory	HRW	15.1	72
KS	Pauline	66619	Victory	HRW	13.9	74
KS	Plains	67869	Mustang	HRW	13.6	75
KS	Plainville	67663	Larned	HRW	15.4	81
KS	Plainville	67663	Larned	HRW	13.8	94
KS	Reserve	66529	Abilene	HRW	14.2	77
KS	Reserve	66529	Arkan	HRW	14.5	74
KS	Reserve	66529	Newton	HRW	12.3	66
KS	Reserve	66529	Thunderbird	HRW	13.3	75
KS	Reserve	66529	Victory	HRW	14.5	75
KS	Satanta	67870	Abilene	HRW	13.8	63
KS	Satanta	67870	Hawk	HRW	10.8	60
KS	Satanta	67870	Hawk	HRW	15.8	69
KS	Satanta	67870	Tam-108	HRW	12.2	38
KS	Satanta	67870	Victory	HRW	12.7	64
KS	Topeka	66618	Abilene-Shawnee	Mix	13.0	77
KS	Topeka	67861	Larned	HRW	12.7	79
KS	Topeka	67861	Larned	HRW	9.6	80
KS	Topeka	66618	Shawnee-Arkan	Mix	11.6	45
KS	Topeka	67861	Tam-107	HRW	13.2	57
KS	Topeka	67861	Tam-107	HRW	12.4	102
KS	Topeka	66618	Tam-108	HRW	13.8	82
KS	Topeka	66617	Victory	HRW	12.0	45
KS	White-Cloud	66094	Abilene	HRW	12.2	78
KS	White-Cloud	66094	Abilene	HRW	12.9	80
KS	White-Cloud	66094	TFS-7846		12.4	62
KS	White-Cloud	66094	Victory	HRW	13.7	74
KS	White-Cloud	66094	Victory	HRW	12.4	77
KS	Winfield	67156	Arkan	HRW	13.8	49
KS	Winfield	67156	Arkan	HRW	14.4	50
KS	Winfield	67156	Century	HRW	12.3	53
KS	Winfield	67156	Pioneer-2157	HRW	13.8	47
KS	Winfield	67156	Pioneer-2157	HRW	12.7	54
KS	Winfield	67156	Plainsman	HRW	14.9	58
KS	Winfield	67156	Stallion	HRW	11.9	52
KS	Winfield	67156	Thunderbird	HRW	13.5	64
KS	Winfield	67156	Triumph-64	HRW	13.5	45
KS	Winfield	67156	Victory	HRW	12.9	54
KS	Zurick	67676	Larned	HRW	12.3	81
KS	Zurick	67676	Newton	HRW	14.4	83
KS	Zurick	67676	Newton	HRW	14.4	84
KS	Zurick	67676	Tam-107	HRW	13.6	98
MI	Alma	48801	Frankenmuth	SWW	10.9	19
MI	Alma	48801	Frankenmuth	SWW	10.5	24
MI	Alma	48801	Frankenmuth	SWW	10.3	25
MI	Alma	48801	Frankenmuth	SWW	10.5	25
MI	Alma	48801	Frankenmuth	SWW	10.6	29
MI	Battle-Creek	49017	Augusta	SWW	10.1	24



TABLE 1. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY LOC.

STATE	REGION	ZIPCODE	VARIETY	CLASS	PRO.	HRD.
MI	Battle-Creek	49017	Augusta	SWW	11.1	25
MI	Battle-Creek	49017	Augusta	SWW	10.9	25
MI	Camden	49232	Caldwell	SRW	10.4	12
MI	Camden	49232	Caldwell	SRW	11.4	17
MI	Camden	49232	Caldwell	SRW	11.8	18
MI	Camden	49232	Caldwell	SRW	10.2	18
MI	Carson-City	48811	Frankenmuth	SWW	9.3	18
MI	Ceresco	49033	Augusta	SWW	9.4	16
MI	Charlotte	48813	Augusta	SWW	11.6	30
MI	Drayton-Plains	44820	Caldwell	SRW	11.0	22
MI	Drayton-Plains	44820	Leaded		10.8	23
MI	Eagle	48822	Frankenmuth	SWW	11.7	26
MI	Eagle	48822	Frankenmuth	SWW	11.6	39
MI	Elwell	48832	Augusta	SWW	10.3	23
MI	Gilford	48736	Augusta	SWW	10.5	19
MI	Gilford	48736	Augusta	SWW	10.2	22
MI	Gilford	48736	Augusta	SWW	10.5	25
MI	Gilford	48736	Augusta	SWW	9.8	27
MI	Gilford	48736	Augusta	SWW	11.6	30
MI	Gilford	48736	Augusta	SWW	10.4	31
MI	Gilford	48736	Augusta	SWW	11.5	33
MI	Gilford	48736	Augusta	SWW	10.7	34
MI	Gilford	48736	Augusta	SWW	11.4	39
MI	Gilford	48736	Frankenmuth	SWW	10.3	32
MI	Grand-Ledge	48837	Frankenmuth	SWW	11.1	23
MI	Grand-Ledge	48837	Frankenmuth	SWW	11.0	26
MI	Grand-Ledge	48837	Frankenmuth	SWW	12.0	27
MI	Grand-Ledge	48837	Frankenmuth	SWW	12.0	29
MI	Grand-Ledge	48837	Frankenmuth	SWW	12.7	32
MI	Lyons	48851	Frankenmuth	SWW	10.2	21
MI	Portland	48875	Augusta	SWW	11.1	25
MI	Shepherd	48883	Frankenmuth	SWW	10.7	25
MI	St-Louis	48880	Augusta	SWW	10.7	23
MI	Sunfield	48890	Augusta	SWW	11.5	29
MI	Sunfield	48890	Frankenmuth	SWW	11.0	20
MI	Sunfield	48890	Frankenmuth	SWW	11.3	22
MN	Appleton	56208	Marshall	HRS	13.7	77
MN	Appleton	56208	Norseman	HRS	14.9	86
MN	Appleton	56208	Wheaton	HRS	14.0	73
MN	Argyle	56713	Marshall	HRS	15.6	73
MN	Argyle	56713	Marshall	HRS	13.2	77
MN	Argyle	56713	Marshall	HRS	15.5	89
MN	Argyle	56713	Marshall	HRS	15.2	89
MN	Argyle	56713	Marshall	HRS	17.4	104
MN	Argyle	56713	Wheaton	HRS	14.2	78
MN	Climax	56523	Butte-86	HRS	15.9	100
MN	Climax	56523	Marshall	HRS	13.5	80
MN	Climax	56523	Marshall	HRS	13.9	82
MN	Climax	56523	Marshall	HRS	15.0	90
MN	Climax	56523	Marshall	HRS	18.2	111
MN	Climax	56523	Pioneer-2369	HRS	14.6	86



TABLE 1. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY LOC.

STATE	REGION	ZIPCODE	VARIETY	CLASS	PRO.	HRD.
MN	Comstock	56525	Butte-86	HRS	17.4	106
MN	Comstock	56525	Marshall	HRS	16.8	100
MN	Comstock	56525	Marshall	HRS	18.2	108
MN	Crookston	56716	Marshall	HRS	16.8	79
MN	Crookston	56716	Olso	HRS	15.2	60
MN	Crookston	56716	Wheaton	HRS	16.2	95
MN	Danvers	56231	Stoa	HRS	14.8	88
MN	Danvers	56231	Wheaton	HRS	14.5	86
MN	Dumont	56236	Butte-86	HRS	16.0	100
MN	Dumont	56236	Butte-86	HRS	16.9	104
MN	Dumont	56236	Marshall	HRS	14.1	81
MN	Elbow-Lake	56531	Marshall	HRS	15.0	85
MN	Elbow-Lake	56531	Marshall	HRS	17.1	93
MN	Elbow-Lake	56531	Marshall	HRS	16.9	93
MN	Elbow-Lake	56531	Wheaton	HRS	14.1	70
MN	Elbow-Lake	56531	Wheaton	HRS	13.7	79
MN	Elbow-Lake	56531	Wheaton	HRS	16.7	82
MN	Foxhome	56543	Marshall	HRS	13.7	71
MN	Foxhome	56543	Marshall	HRS	15.4	85
MN	Foxhome	56543	Pioneer-906R	Mix	17.5	78
MN	Herman	56248	Butte-86	HRS	16.2	89
MN	Herman	56248	Butte-86	HRS	14.8	95
MN	Herman	56248	Butte-86	HRS	17.2	98
MN	Herman	56248	Marshall	HRS	15.0	84
MN	Herman	56248	Marshall	HRS	15.4	88
MN	Herman	56248	Marshall	HRS	16.6	100
MN	Holloway	56249	Vance	HRS	17.4	87
MN	Madison	56256	Cert-Marshall	Mix	15.3	91
MN	Madison	56256	Marshall	HRS	16.4	89
MN	Madison	56256	Wheaton	HRS	15.0	76
MN	Madison	56256	Wheaton	HRS	14.6	83
MN	Renville	56284	Butte-86	HRS	15.2	97
MN	Renville	56284	Marshall	HRS	14.9	82
MN	Renville	56284	Pioneer-2305		17.4	96
MN	Renville	56284	Wheaton	HRS	17.0	72
MN	Rothsay	56579	Len	HRS	16.1	89
MN	Rothsay	56579	Marshall	HRS	17.1	93
MN	Rothsay	56579	Shield	HRS	15.4	84
MN	Rothsay	56579	Wheaton	HRS	15.6	91
MN	Wheaton	56296	Butte-86	HRS	15.9	96
MN	Wheaton	56296	Marshall	HRS	14.6	83
MN	Wheaton	56296	Marshall	HRS	14.7	86
MO	Bethany	64424	Caldwell	SRW	12.4	30
MO	Bethany	64424	Pioneer-2555	SRW	13.9	20
MO	Galt	64641	Merchman-Kate		11.9	18
MO	Gilman-City	64642	Tam-107	HRW	11.1	83
MO	Gilman-City	64642	Tam-107	HRW	13.3	93
MO	Gilman-City	64642	Tam-108	HRW	10.2	40
MO	Golden-City	64748	Caldwell	SRW	10.8	16
MO	Golden-City	64748	Caldwell	SRW	9.8	26
MO	Golden-City	64748	Caldwell	SRW	11.3	29

TABLE 1. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY LOC.

STATE	REGION	ZIPCODE	VARIETY	CLASS	PRO.	HRD.
MO	Golden-City	64748	Pioneer-2553	SRW	10.6	12
MO	Houstonia	65333	Pioneer-2551	SRW	10.9	18
MO	Houstonia	65333	Pioneer-2555	SRW	9.9	23
MO	Jefferson-City	65102	Caldwell	SRW	12.3	17
MO	Jefferson-City	65102	Caldwell	SRW	12.1	23
MO	Jefferson-City	65102	Caldwell	SRW	12.3	24
MO	Jefferson-City	65102	Caldwell	SRW	11.5	25
MO	Jefferson-City	65102	Caldwell	SRW	11.3	26
MO	Jefferson-City	65102	Caldwell	SRW	13.4	28
MO	Jefferson-City	65102	Caldwell	SRW	12.7	30
MO	Jefferson-City	65102	Caldwell	SRW	14.1	31
MO	Jefferson-City	65102	Pioneer-2251		12.1	20
MO	Lockwood	65682	Caldwell	SRW	10.9	23
MO	Lockwood	65682	Caldwell	SRW	11.2	27
MO	Lockwood	65682	Caldwell	SRW	11.3	30
MO	Lockwood	65682	Pike	SRW	10.5	10
MO	Marshall	65340	Caldwell	SRW	9.9	15
MO	Marshall	65340	Caldwell	SRW	10.4	26
MO	Marshall	65340	Cardinal	SRW	11.0	18
MO	Marshall	65340	Cardinal	SRW	11.2	34
MO	Marshall	65340	Pioneer-2551	SRW	11.2	7
MO	Marshall	65340	Pioneer-2555	SRW	13.3	31
MO	O'Fallon	63366	Cargill-Bounty	Mix	11.3	62
MO	Old-Monroe	63369	Caldwell	SRW	11.9	33
MO	St-Louis	43140	Cardinal	SRW	10.5	26
MO	Sweet-Springs	65351	Cardinal	SRW	10.0	16
MO	Trenton	64683	Caldwell	SRW	10.2	18
MO	Trenton	64683	Pike	SRW	11.3	14
MO	Trenton	64683	Tam-107	HRW	12.3	81
MO	Trenton	64683	Tam-107	HRW	13.8	86
MS	Arkabutla	38602	Stephens	SWW	11.3	32
MS	Ashland	38603	Stephens	SWW	11.3	21
MS	Askew	38604	Stephens	SWW	11.9	31
MT	Bainville	59212	Agassiz	HRW	11.4	71
MT	Billings	59101	Weston	HRW	13.4	55
MT	Edgar	59026	Hawk	HRW	15.0	72
MT	Edgar	59026	Weston	HRW	14.8	59
MT	Havre	59501	Neeley	HRW	11.8	62
MT	Havre	59501	Neeley	HRW	13.2	66
MT	Havre	59501	Norstar	HRW	11.3	58
MT	Havre	59501	Norstar	HRW	14.5	70
MT	Havre	59501	Norwin	HRW	11.4	82
MT	Havre	59501	Norwin	HRW	11.4	85
MT	Havre	59501	Redwin	HRW	14.4	75
MT	Havre	59501	Redwin	HRW	13.9	79
MT	Havre	59501	Winoka	HRW	12.5	74
MT	Havre	59501	Winoka	HRW	14.7	78
MT	Laurel	59044	Neeley	HRW	11.8	66
MT	Rapelie	59067	Hawk	HRW	13.4	70
MT	Rapelie	59067	Neeley	HRW	10.9	70
MT	Townsend	59644	Neeley	HRW	14.1	56

**TABLE 1. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY LOC.**

STATE REGION		ZIPCODE	VARIETY	CLASS	PRO.	HRD.
MT	Townsend	59644	Redskin	HRW	13.8	56
MT	Townsend	59644	Tiber	HRW	16.8	55
ND	Beach	58621	Butte-86	HRS	13.8	88
ND	Beach	58621	Len	HRS	16.2	91
ND	Beach	58621	Stoa	HRS	15.4	94
ND	Beach	58621	Stoa	HRS	19.8	107
ND	Beulah	58523	Alex	HRS	13.8	98
ND	Beulah	58523	Alex	HRS	15.0	107
ND	Beulah	58523	Stoa	HRS	17.9	108
ND	Beulah	58523	Stoa	HRS	16.7	108
ND	Beulah	58523	Waldron	HRS	13.9	92
ND	Beulah	58523	Waldron	HRS	14.0	94
ND	Carrington	58421	Butte-86	HRS	16.0	97
ND	Carrington	58421	Butte-86	HRS	16.4	103
ND	Carrington	58421	Len	HRS	16.6	94
ND	Carrington	58421	Len	HRS	17.2	96
ND	Carrington	58421	Stoa	HRS	14.7	97
ND	Carrington	58421	Stoa	HRS	15.1	98
ND	Fredonia	58440	Butte	HRS	15.7	106
ND	Fredonia	58440	Butte-86	HRS	16.8	102
ND	Fredonia	58440	Len	HRS	16.9	103
ND	Fredonia	58440	Stoa	HRS	14.0	89
ND	Fredonia	58440	Stoa	HRS	16.0	103
ND	Grafton	58237	Butte-86	HRS	15.3	81
ND	Grafton	58237	Butte-86	HRS	14.1	84
ND	Grafton	58237	Stoa	HRS	14.1	73
ND	Grafton	58237	Stoa	HRS	16.2	86
ND	Harvey	58341	Butte-86	HRS	15.9	101
ND	Harvey	58341	Marshall	HRS	17.3	86
ND	Harvey	58341	Stoa	HRS	18.0	89
ND	Harvey	58341	Stoa	HRS	17.8	97
ND	Kulm	58456	Stoa	HRS	13.7	98
ND	Larimore	58251	Butte-86	HRS	16.9	104
ND	Larimore	58251	Len	HRS	16.0	95
ND	Larimore	58251	Marshall	HRS	14.2	75
ND	Larimore	58251	Marshall	HRS	14.5	76
ND	Larimore	58251	Pioneer-2369	HRS	15.5	93
ND	Larimore	58251	Stoa	HRS	14.9	85
ND	Leeds	58346	Marshall	HRS	17.0	92
ND	Nече	58265	Butte-86	HRS	14.5	97
ND	Nече	58265	Marshall	HRS	14.9	76
ND	Nече	58265	Marshall	HRS	14.4	80
ND	Nече	58265	Marshall	HRS	13.8	88
ND	Nече	58265	Stoa	HRS	15.7	91
ND	Nече	58265	Telemark	HRS	15.2	87
ND	Park-River	58770	Butte-86	HRS	15.6	96
ND	Regan	58477	Butte-86	HRS	18.2	110
ND	Regan	58477	Butte-86	HRS	18.6	120
ND	Regan	58477	Len	HRS	16.5	96
ND	Regan	58477	Len	HRS	15.9	98
ND	Regan	58477	Stoa	HRS	16.0	104



TABLE 1. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY LOC.

STATE	REGION	ZIPCODE	VARIETY	CLASS	PRO.	HRD.
ND	Regan	58477	Stoa	HRS	19.9	110
ND	Scranton	58653	Butte	HRS	15.8	101
ND	Scranton	58653	Butte-86	HRS	15.0	94
ND	Scranton	58653	Len	HRS	15.9	88
ND	Scranton	58653	Len	HRS	16.0	96
ND	Scranton	58653	Len	HRS	15.7	97
ND	Williston	58801	Butte	HRS	15.8	103
NE	Chappell	69129	Brule	HRW	12.6	63
NE	Chappell	69129	Redland	HRW	12.2	56
NE	Chappell	69129	Redland	HRW	11.7	62
NE	Chappell	69129	Redland	HRW	12.2	64
NE	Chappell	69129	Siouxland	HRW	12.7	67
NE	Chappell	69129	Tam-107	HRW	12.8	79
NE	Edison	68936	Abilene	HRW	12.5	59
NE	Grant	69140	Arapahoe	HRW	12.8	67
NE	Grant	69140	Brule	HRW	14.6	70
NE	Grant	69140	Centurk	HRW	11.4	69
NE	Grant	69140	Redland	HRW	14.3	57
NE	Grant	69140	Tam-107	HRW	14.5	74
NE	Grant	69140	Tam-200	HRW	13.2	58
NE	Grant	69140	Thunderbird	HRW	15.3	68
NE	Grant	69140	Victory	HRW	14.6	68
NE	Hay-Springs	69347	Abilene	HRW	15.9	77
NE	Hay-Springs	69347	Arapahoe	HRW	15.6	65
NE	Hay-Springs	69347	Cody	HRW	15.9	70
NE	Hay-Springs	69347	Redland	HRW	15.3	56
NE	Hay-Springs	69347	Thunderbird	HRW	15.9	70
NE	Hay-Springs	69347	Victory	HRW	15.0	67
NE	Hemingford	69348	Brule	HRW	13.7	62
NE	Hemingford	69348	Buckskin	HRW	16.0	69
NE	Hemingford	69348	Centura	HRW	15.5	83
NE	Hemingford	69348	Cody	HRW	15.9	74
NE	Hemingford	69348	Colt	HRW	14.3	52
NE	Hemingford	69348	Redland	HRW	13.5	58
NE	Hemingford	69348	Scout-66	HRW	14.2	73
NE	Hemingford	69348	Siouxland	HRW	14.4	67
NE	Kimball	69145	Buckskin	HRW	12.3	63
NE	Kimball	69145	Centura	HRW	13.3	75
NE	Kimball	69145	Hawk	HRW	14.1	76
NE	Kimball	69145	Siouxland	HRW	12.1	62
NE	Kimball	69145	Thunderbird	HRW	14.7	61
NE	Kimball	69145	Thunderbird	HRW	13.6	68
NE	Kimball	69145	Thunderbird	HRW	14.9	76
NE	Kimball	69145	Victory	HRW	14.8	67
NE	McCook	69001	Cody	HRW	14.8	70
NE	McCook	69001	Colt	HRW	13.6	50
NE	McCook	69001	Siouxland	HRW	14.4	64
NE	McCook	69001	Thunderbird	HRW	15.6	71
NE	McCook	69001	Trailblazer	HRW	15.7	70
NE	McCook	69001	Victory	HRW	14.3	57
NE	Ogallala	69153	Thunderbird	HRW	14.7	59



**TABLE 1. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY LOC.**

STATE	REGION	ZIPCODE	VARIETY	CLASS	PRO.	HRD.
NE	Venango	69168	Centura	HRW	14.1	68
NE	Venango	69168	Centura	HRW	12.9	71
NE	Venango	69168	Redland	HRW	12.3	65
NE	Venango	69168	Tam-105	HRW	12.4	69
NE	Venango	69168	Tam-107	HRW	13.6	65
NE	Venango	69168	Tam-107	HRW	14.6	73
NE	Venango	69168	Tam-107	HRW	13.4	75
OH	Arcanum	45304	Pioneer-2550	SRW	10.3	14
OH	Canfield	44406	Tyler	SRW	10.5	21
OH	Columbiana	44408	Cardinal	SRW	10.5	22
OH	Columbus-Grove	45830	Becker	SRW	9.2	16
OH	Columbus-Grove	45830	Dynasty	SRW	9.9	14
OH	Columbus-Grove	45830	Dynasty	SRW	10.9	29
OH	Crestline	44827	Horns-20		10.1	23
OH	Dola	45835	Becker	SRW	10.8	20
OH	Dunkirk	45836	Tyler	SRW	10.7	29
OH	Glandorf	45848	Cardinal	SRW	10.1	22
OH	Glandorf	45848	Dynasty	SRW	11.6	26
OH	Glandorf	45848	Dynasty	SRW	11.5	26
OH	Harrod	45850	Caldwell	SRW	11.4	27
OH	Kingston	45644	Becker	SRW	9.4	12
OH	Kingston	45644	Caldwell	SRW	9.7	13
OH	Kingston	45644	Hillsdale	SRW	10.2	18
OH	Leipsic	45856	Caldwell	SRW	11.5	25
OH	Leipsic	45856	Tyler	SRW	12.9	23
OH	Ludlow-Falls	45359	Caldwell	SRW	11.1	22
OH	Mechanicsburg	43044	Becker	SRW	9.7	23
OH	Mechanicsburg	43044	Caldwell	SRW	10.1	25
OH	Mechanicsburg	43044	Dynasty	SRW	9.6	10
OH	Mechanicsburg	43044	Titan	SRW	11.3	29
OH	Milford-Center	43045	Becker	SRW	10.5	13
OH	Milford-Center	43045	Caldwell	SRW	9.7	23
OH	Minster	45865	Becker	SRW	9.7	6
OH	Minster	45865	Caldwell	SRW	11.5	23
OH	Minster	45865	Cardinal	SRW	10.1	25
OH	Minster	45865	Cardinal	SRW	10.0	26
OH	Minster	45865	Hart	SRW	10.3	13
OH	Minster	45865	Scotty	SRW	9.9	12
OH	Minster	45865	Titan	SRW	11.2	29
OH	Montpelier	43543	Caldwell	SRW	10.4	16
OH	Montpelier	43543	Caldwell	SRW	10.6	16
OH	Montpelier	43543	Cardinal	SRW	10.0	12
OH	Mt-Vernon	43050	Caldwell/Cardinal	Mix	11.3	18
OH	Mt-Vernon	43050	FS402/GR876	Mix	11.1	16
OH	North-Lima	44452	Tyler	SRW	10.5	22
OH	Ottawa	45875	Becker	SRW	11.1	29
OH	Ottawa	45875	Caldwell	SRW	10.1	28
OH	Petersburg	44454	Cardinal	SRW	11.1	20
OH	Pioneer	43554	Cardinal	SRW	10.2	16
OH	Plain-City	43064	Becker	SRW	10.4	31
OH	Pleasant-Hill	45359	Becker	SRW	10.3	15

TABLE 1. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY LOC.

STATE	REGION	ZIPCODE	VARIETY	CLASS	PRO.	HRD.
OH	Pleasant-Hill	45359	Caldwell	SRW	10.3	24
OH	Pleasant-Hill	45359	Cardinal	SRW	9.8	19
OH	Pleasant-Hill	45359	Cardinal	SRW	10.4	30
OH	Salem	44460	Tyler	SRW	11.8	25
OH	Utica	43080	Titan	SRW	11.2	16
OH	West-Unity	43570	Becker	SRW	9.5	8
OH	West-Unity	43570	Hillsdale	SRW	10.5	21
OH	Youngstown	44514	Tyler	SRW	10.2	24
OK	Afton	74331	Chisholm	HRW	11.2	38
OK	Afton	74331	Chisholm	HRW	11.1	52
OK	Afton	74331	Chisholm	HRW	12.0	56
OK	Afton	74331	Chisholm	HRW	10.8	68
OK	Afton	74331	Chisholm	HRW	12.3	73
OK	Afton	74331	Mesa	HRW	11.6	59
OK	Afton	74331	Pioneer-2157	HRW	11.3	68
OK	Afton	74331	Pioneer-2157	HRW	11.2	70
OK	Afton	74331	Pioneer-2157	HRW	12.1	71
OK	Afton	74331	Pioneer-2157	HRW	10.6	71
OK	Afton	74331	Pioneer-2157	HRW	11.6	75
OK	Afton	74331	Tam-101	HRW	9.8	53
OK	Afton	74331	Tam-108	HRW	11.8	46
OK	Bison	73720	Chisholm	HRW	10.4	42
OK	Bison	73720	Chisholm	HRW	9.9	48
OK	Bison	73720	Chisholm	HRW	11.5	49
OK	Bison	73720	Chisholm	HRW	12.0	50
OK	Bison	73720	Chisholm	HRW	12.3	54
OK	Bison	73720	Mesa	HRW	10.2	62
OK	Bison	73720	Pioneer-2157	HRW	13.8	54
OK	Bison	73720	Pioneer-2157	HRW	13.6	62
OK	Bison	73720	Pioneer-2157	HRW	11.1	66
OK	Bison	73720	Pioneer-2157	HRW	13.1	69
OK	Bison	73720	Pioneer-2180	HRW	12.0	96
OK	Bison	73720	Stallion	HRW	13.4	76
OK	Bison	73720	Tam-101	HRW	13.9	66
OK	Bison	73720	Tam-108	HRW	13.3	58
OK	Chickasha	73018	Chisholm	HRW	10.6	41
OK	Chickasha	73018	Chisholm	HRW	10.8	42
OK	Chickasha	73018	Chisholm	HRW	11.6	44
OK	Chickasha	73018	Chisholm	HRW	10.8	44
OK	Chickasha	73018	Chisholm	HRW	11.3	45
OK	Chickasha	73018	Pioneer-2157	HRW	10.4	33
OK	Chickasha	73018	Pioneer-2157	HRW	10.7	52
OK	Chickasha	73018	Pioneer-2157	HRW	11.8	61
OK	Chickasha	73018	Pioneer-2157	HRW	12.2	62
OK	Chickasha	73018	Pioneer-2157	HRW	12.3	68
OK	Chickasha	73018	Pony	HRW	10.4	41
OK	Chickasha	73018	Tam-101	HRW	12.9	64
OK	Chickasha	73018	Tam-101	HRW	12.6	71
OK	Chickasha	73018	Triumph	HRW	11.9	56
OK	Chickasha	73018	Vona	HRW	12.1	54
OK	Frederick	73542	Chisholm	HRW	14.2	49

**TABLE 1. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY LOC.**

STATE REGION		ZIPCODE	VARIETY	CLASS	PRO.	HRD.
OK	Frederick	73542	Chisholm	HRW	13.5	50
OK	Frederick	73542	Chisholm	HRW	11.6	52
OK	Frederick	73542	Chisholm	HRW	14.3	53
OK	Frederick	73542	Chisholm	HRW	11.9	59
OK	Frederick	73542	Mesa	HRW	14.7	83
OK	Frederick	73542	Mesa	HRW	14.7	84
OK	Frederick	73542	Mesa	HRW	14.6	91
OK	Frederick	73542	Mesa	HRW	14.7	93
OK	Frederick	73542	Mesa-Cassidy	Mix	14.6	94
OK	Frederick	73542	Pioneer-2157	HRW	13.7	65
OK	Frederick	73542	Pioneer-2157	HRW	13.9	72
OK	Frederick	73542	Pioneer-2157	HRW	13.6	74
OK	Frederick	73542	Pioneer-2157	HRW	13.7	75
OK	Frederick	73542	Pioneer-2157	HRW	13.5	78
OK	Kingfisher	73750	Chisholm	HRW	12.2	41
OK	Kingfisher	73750	Chisholm	HRW	12.2	49
OK	Kingfisher	73750	Chisholm	HRW	12.3	50
OK	Kingfisher	73750	Chisholm	HRW	12.2	51
OK	Kingfisher	73750	Chisholm	HRW	12.2	53
OK	Kingfisher	73750	Pioneer-2157	HRW	12.6	61
OK	Kingfisher	73750	Pioneer-2157	HRW	13.8	61
OK	Kingfisher	73750	Stallion	HRW	13.8	56
OK	Kingfisher	73750	Stallion	HRW	13.5	56
OK	Kingfisher	73750	Stallion	HRW	12.4	60
OK	Kingfisher	73750	Stallion	HRW	12.3	63
OK	Kingfisher	73750	Stallion	HRW	14.8	65
OK	Kingfisher	73750	Stallion	HRW	12.5	68
OK	Kingfisher	73750	Stallion	HRW	12.4	76
OK	Kingfisher	73750	Stallion	HRW	12.1	80
OK	Medford	73759	Chisholm	HRW	11.4	36
OK	Medford	73759	Chisholm	HRW	13.2	41
OK	Medford	73759	Chisholm	HRW	10.8	44
OK	Medford	73759	Chisholm	HRW	13.3	65
OK	Medford	73759	Mesa	HRW	13.3	56
OK	Medford	73759	Mesa	HRW	12.4	64
OK	Medford	73759	Pioneer-2157	HRW	13.2	58
OK	Medford	73759	Pioneer-2157	HRW	13.7	61
OK	Medford	73759	Pioneer-2157	HRW	14.6	61
OK	Medford	73759	Pioneer-2157	HRW	14.6	62
OK	Medford	73759	Pioneer-2157	HRW	13.6	68
OK	Medford	73759	Pioneer-2180	HRW	13.9	85
OK	Medford	73759	Thunderbird	HRW	13.6	61
OK	Medford	73759	Thunderbird	HRW	13.6	85
OK	Medford	73759	Triumph	HRW	13.4	67
OK	Stillwater	74076	Pioneer-2127		11.1	66
OK	Stillwater	74076	Pioneer-2127		13.0	68
OK	Stillwater	74076	Pioneer-2157	HRW	11.0	38
OK	Stillwater	74076	Pioneer-2157	HRW	10.6	47
OK	Stillwater	74076	Pioneer-2157	HRW	12.0	62
OK	Stillwater	74076	Pioneer-2157	HRW	12.3	63
OK	Stillwater	74076	Pioneer-2157	HRW	12.8	70



TABLE 1. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY LOC.

STATE	REGION	ZIPCODE	VARIETY	CLASS	PRO.	HRD.
OK	Stillwater	74076	Pioneer-2167	HRW	11.4	54
OK	Stillwater	74076	Pioneer-2167	HRW	11.2	59
OK	Stillwater	74076	Triumph	HRW	13.4	46
OK	Stillwater	74076	Triumph	HRW	14.0	52
OK	Stillwater	74076	Triumph	HRW	13.3	54
OK	Stillwater	74076	Triumph	HRW	12.6	55
OK	Stillwater	74076	Triumph	HRW	14.0	71
OK	Tonkawa	74653	Chilsolm	HRW	12.3	43
OK	Tonkawa	74653	Chisholm	HRW	11.4	50
OK	Tonkawa	74653	Chisholm	HRW	12.0	51
OK	Tonkawa	74653	Pioneer-2157	HRW	12.5	48
OK	Tonkawa	74653	Pioneer-2157	HRW	13.4	60
OK	Tonkawa	74653	Pioneer-2157	HRW	11.3	61
OK	Tonkawa	74653	Pioneer-2157	HRW	11.6	61
OK	Tonkawa	74653	Pioneer-2157	HRW	13.2	64
OK	Tonkawa	74653	Stallion	HRW	14.4	57
OK	Tonkawa	74653	Stallion	HRW	11.8	64
OK	Tonkawa	74653	Stallion	HRW	12.0	71
OK	Tonkawa	74653	Stallion	HRW	12.8	76
OK	Weatherford	73096	Chisholm	HRW	12.5	46
OK	Weatherford	73096	Chisholm	HRW	11.2	47
OK	Weatherford	73096	Chisholm	HRW	10.8	48
OK	Weatherford	73096	Chisholm	HRW	12.5	49
OK	Weatherford	73096	Chisholm	HRW	12.7	50
OK	Weatherford	73096	Pioneer-2157	HRW	12.8	62
OK	Weatherford	73096	Pioneer-2157	HRW	13.1	63
OK	Weatherford	73096	Pioneer-2157	HRW	12.8	63
OK	Weatherford	73096	Pioneer-2157	HRW	13.0	65
OK	Weatherford	73096	Pioneer-2157	HRW	14.1	70
OK	Weatherford	73096	Tam-101	HRW	13.1	52
OK	Weatherford	73096	Tam-101	HRW	14.2	55
OK	Weatherford	73096	Tam-101	HRW	14.1	56
OK	Weatherford	73096	Tam-101	HRW	14.0	57
OK	Weatherford	73096	Tam-101	HRW	14.5	64
OK	Woodward	73802	Chisholm	HRW	11.9	30
OK	Woodward	73802	Chisholm	HRW	13.9	40
OK	Woodward	73802	Chisholm	HRW	10.3	41
OK	Woodward	73802	Chisholm	HRW	13.9	47
OK	Woodward	73802	Chisholm	HRW	12.0	52
OK	Woodward	73802	Mesa	HRW	16.1	78
OK	Woodward	73802	Mesa	HRW	16.8	82
OK	Woodward	73802	Pioneer-2157	HRW	15.8	52
OK	Woodward	73802	Pioneer-2157	HRW	14.4	54
OK	Woodward	73802	Pioneer-2157	HRW	16.9	56
OR	Amity	97101	Hill-81	SWW	10.3	27
OR	Amity	97101	Stephens	SWW	10.6	31
OR	Amity	97101	Stephens	SWW	10.6	33
OR	Donald	97020	Stephens	SWW	10.4	31
OR	Grass-Valley	97029	Crew	Club	9.7	29
OR	Grass-Valley	97029	Stephens	SWW	10.1	37
OR	Grass-Valley	97029	Tres	Club	10.8	37



**TABLE 1. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY LOC.**

STATE	REGION	ZIPCODE	VARIETY	CLASS	PRO.	HRD.
OR	Maupin	97037	Stephens	SWW	10.5	31
OR	Wilsonville	97020	Hill-81	SWW	10.8	33
PA	Butler	16001	Cardinal	SRW	11.5	23
SD	Aberdeen	57401	Butte	HRS	14.7	93
SD	Bradley	57217	Butte-86	HRS	14.7	97
SD	Brookings	57006	Guard	HRS	14.7	78
SD	Carpenter	57322	Butte-86	HRS	15.1	98
SD	Florence	57235	Butte-86	HRS	15.2	95
SD	Glenham	57631	Butte-86	HRS	16.3	89
SD	Madison	57042	Guard	HRS	14.4	84
SD	Platt	57369	Guard	HRS	15.1	78
SD	Platte	57369	Guard	HRS	14.2	83
SD	Watertown	57201	Guard	HRS	13.1	52
SD	Watertown	57201	Guard	HRS	13.0	52
SD	Watertown	57201	Guard	HRS	12.5	58
SD	Watertown	57201	Guard	HRS	12.4	65
SD	Watertown	57201	Guard	HRS	12.7	71
WA	Almira	99103	Lewjain	SWW	12.3	21
WA	Almira	99103	Lewjain	SWW	11.6	24
WA	Almira	99103	Tres	Club	10.5	21
WA	Benton-City	99320	Hill-81	SWW	11.8	23
WA	Bickleton	99322	Barbee	Club	10.5	25
WA	Bickleton	99322	Edwall	SWW	9.0	16
WA	Bickleton	99322	Lewjain	SWW	10.1	19
WA	Bickleton	99322	Penawawa	SWW	13.0	17
WA	Bickleton	99322	Tres	Club	9.1	21
WA	Bickleton	99322	Tres	Club	10.7	23
WA	Cheney	99004	Bliss-Dirkwin	Mix	10.6	15
WA	Cheney	99004	Daws	SWW	10.8	19
WA	Cheney	99004	Hill-81	SWW	11.6	23
WA	Cheney	99004	Tres	Club	9.5	12
WA	Colfax	99111	Cashup	SWW	11.3	22
WA	Colfax	99111	Hill-81	SWW	11.3	18
WA	Colfax	99111	Owens	SWW	12.3	23
WA	Colfax	99111	Stephens	SWW	12.2	34
WA	Coulee-City	99115	Cardinal	SRW	10.6	28
WA	Coulee-City	99115	Daws	SWW	9.6	23
WA	Coulee-City	99115	Daws	SWW	10.8	23
WA	Coulee-City	99115	Daws	SWW	9.2	26
WA	Coulee-City	99115	Lewjain	SWW	13.0	18
WA	Coulee-City	99115	Lewjain	SWW	10.4	25
WA	Coulee-City	99115	Lewjain	SWW	10.3	37
WA	Coulee-City	99115	Sprague-Daws	Mix	10.2	22
WA	Coulee-City	99115	Sprague-Daws	Mix	10.3	24
WA	Coulee-City	99115	Sprague-Daws	Mix	10.1	25
WA	Dayton	99328	Daws-Stephens	Mix	11.5	13
WA	Dayton	99328	Dusty	SWW	12.1	19
WA	Dayton	99328	Fielder	SWW	12.7	22
WA	Dayton	99328	Fieldwin	SWW	13.7	22
WA	Dayton	99328	Hill-81	SWW	11.5	15
WA	Dayton	99328	Hill-81	SWW	11.3	19

TABLE 1. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY LOC.

STATE	REGION	ZIPCODE	VARIETY	CLASS	PRO.	HRD.
WA	Dayton	99328	Hill-81	SWW	12.3	20
WA	Dayton	99328	Hill-81	SWW	11.8	26
WA	Dayton	99328	Owens	SWW	13.6	17
WA	Dayton	99328	Owens	SWW	13.3	18
WA	Dayton	99328	Stephens	SWW	11.9	15
WA	Dayton	99328	Stephens	SWW	11.4	24
WA	Dayton	99328	Stephens-Hill	Mix	10.4	23
WA	Dayton	99328	Tres	Club	14.2	25
WA	Edwall	99008	Lewjain	SWW	11.6	32
WA	Fairfield	99012	Edwall	SWW	11.9	28
WA	Fairfield	99012	Hill-81-Edward	Mix	11.5	13
WA	Fairfield	99012	Penawawa	SWW	11.6	18
WA	Fairfield	99012	Penawawa-Lewjain	Mix	11.9	22
WA	Granger	98932	Lewjain-Edwall	Mix	13.4	27
WA	Hartline	99135	Crew-Tres	Mix	11.3	28
WA	Hartline	99135	Edwall	SWW	13.5	19
WA	Hartline	99135	Owens	SWW	14.1	21
WA	Hartline	99135	Sprague-Daws	Mix	10.4	24
WA	Hartline	99135	Tres	Club	10.8	26
WA	Hartline	99135	Tres-Crew	Mix	11.1	25
WA	Hartline	99135	Tres-Crew	Mix	11.0	30
WA	Hartline	99135	Tres-Crew	Mix	11.3	33
WA	Kahlotus	99335	Moro	Club	11.3	22
WA	Kahlotus	99335	Waverly	SWW	14.8	32
WA	Lacrosse	99143	Owens	SWW	13.0	23
WA	Mansfield	98830	Sprague	SWW	10.9	20
WA	Mansfield	98830	Sprague	SWW	10.7	22
WA	Mansfield	98830	Sprague	SWW	10.9	24
WA	Palouse	99161	Cashup	SWW	10.7	19
WA	Pomeroy	99347	Cashup	SWW	11.0	21
WA	Pomeroy	99347	Dusty	SWW	11.8	20
WA	Pomeroy	99347	Edwall	SWW	12.0	26
WA	Pomeroy	99347	Edwall	SWW	11.6	26
WA	Pomeroy	99347	Hill-81	SWW	10.3	17
WA	Pomeroy	99347	Hill-81	SWW	10.9	22
WA	Pomeroy	99347	Hill-81	SWW	11.8	24
WA	Pomeroy	99347	Lewjain	SWW	11.4	21
WA	Pomeroy	99347	Stephens	SWW	12.1	24
WA	Pomeroy	99347	Stephens	SWW	12.3	26
WA	Pomeroy	99347	Tres	Club	10.6	26
WA	Prescott	99348	Daws	SWW	12.5	24
WA	Prescott	99348	Daws	SWW	11.5	24
WA	Prescott	99348	Daws	SWW	11.3	24
WA	Prescott	99348	Daws	SWW	12.4	35
WA	Prescott	99348	Daws-Stephens	Mix	12.0	26
WA	Prescott	99348	Madsen	SWW	12.1	30
WA	Prescott	99348	Stephens	SWW	12.0	27
WA	Prescott	99348	Stephens	SWW	12.3	29
WA	Prescott	99348	Stephens	SWW	13.1	37
WA	Prescott	99348	Tres	Club	12.8	28
WA	Pullman	99163	Stephens	SWW	11.6	28

**TABLE 1. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY LOC.**

STATE	REGION	ZIPCODE	VARIETY	CLASS	PRO.	HRD.
WA	Quincy	98848	Stephens	SWW	12.1	35
WA	Ritzville	99169	Lewjain	SWW	12.1	20
WA	Ritzville	99169	Moro	Club	10.0	23
WA	Ritzville	99169	Moro	Club	10.2	23
WA	Ritzville	99169	Moro	Club	10.0	24
WA	Ritzville	99169	Owens-Tres	Mix	12.5	23
WA	Ritzville	99169	Tres	Club	10.5	26
WA	Rosalia	99170	Hill-81	SWW	11.3	30
WA	Rosalia	99170	Penawawa	SWW	12.8	19
WA	Saint-John	99171	Daws	SWW	10.0	35
WA	Saint-John	99171	Edwall	SWW	14.2	15
WA	Saint-John	99171	Stephens	SWW	10.8	26
WA	Sprague	99032	Edwall	SWW	14.3	19
WA	Sprague	99032	Lewjain-Edwall	Mix	12.4	22
WA	Walla-Walla	99362	Daws	SWW	10.7	27
WA	Walla-Walla	99362	Tres	Club	11.2	29
WA	Walla-Walla	99362	Tres	Club	11.9	35
WA	Waterville	98858	Sprague	SWW	11.1	21
WA	Waterville	98858	Sprague	SWW	10.9	22
WA	Waterville	98858	Sprague	SWW	11.8	22
WA	Waterville	98858	Sprague	SWW	11.0	23
WA	Waterville	98858	Sprague	SWW	11.7	24
WA	Waterville	98858	Sprague	SWW	11.9	28
WA	Waterville	98858	Sprague-Johns	Mix	10.9	16
WA	Wilbur	99185	Lewjain	SWW	12.5	14
WA	Wilbur	99185	Lewjain	SWW	9.6	19
WA	Wilbur	99185	Lewjain	SWW	11.9	20
WA	Wilbur	99185	Lewjain	SWW	10.0	22
WA	Wilbur	99185	Lewjain	SWW	10.2	23
WA	Wilbur	99185	Lewjain	SWW	10.0	26
WA	Wilbur	99185	Tres	Club	10.7	14
WA	Wilbur	99185	Tres	Club	10.2	19
WA	Wilbur	99185	Tres	Club	10.6	25
WA	Wilbur	99185	Tres	Club	11.4	25
WA	Wilbur	99185	Tres	Club	9.8	25
WA	Wilbur	99185	Tres	Club	11.2	26
WA	Wilbur	99185	Tres	Club	11.7	26
WA	Wilbur	99185	Tres	Club	13.1	29
WA	Wilbur	99185	Tres	Club	11.8	29
WA	Wilbur	99185	Tres	Club	10.0	29
WA	Wilson-Creek	98860	Tres	Club	11.7	30



**TABLE 2. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY LOC.**

STATE REGION		ZIPCODE	VARIETY	CLASS	PRO.	HRD.
CA	Butte-Co	95965	Anza	HRS	9.9	86
CA	Butte-Co	95965	Baker	HRS	12.1	87
CA	Butte-Co	95965	Klasic	HWW	11.2	73
CA	Butte-Co	95965	Probrand-775	HRS	10.8	79
CA	Butte-Co	95965	Serra	HRS	10.0	75
CA	Butte-Co	95965	Tadinia	HRS	10.1	100
CA	Butte-Co	95965	UC839	HRS	11.3	74
CA	Butte-Co	95965	UC842	HRS	12.1	83
CA	Butte-Co	95965	UC849	HWS	11.2	85
CA	Butte-Co	95965	UC850	Club	10.6	35
CA	Butte-Co	95965	UC851	HWS	10.4	92
CA	Butte-Co	95965	Yecora-Rojo	HRS	10.0	81
CA	Butte-Co	95965	Yecora-Rojo-87W	HRW	11.6	67
CA	Butte-Co	95965	Yolo	HRS	10.6	93
CA	Davis	95616	Anza	HRS	12.5	101
CA	Davis	95616	Baker	HRS	14.1	87
CA	Davis	95616	Klasic	HWW	13.4	79
CA	Davis	95616	Probrand-775	HRS	14.9	66
CA	Davis	95616	Serra	HRS	13.5	68
CA	Davis	95616	Tadinia	HRS	12.1	88
CA	Davis	95616	UC839	HRS	12.6	86
CA	Davis	95616	UC842	HRS	14.0	85
CA	Davis	95616	UC849	HWS	14.3	102
CA	Davis	95616	UC850	Club	13.5	50
CA	Davis	95616	UC851	HWS	13.6	86
CA	Davis	95616	Yecora-Rojo	HRS	14.6	81
CA	Davis	95616	Yecora-Rojo-87W	HRW	13.5	100
CA	Davis	95616	Yolo	HRS	12.0	95
CA	Kern-Co	93301	Anza	HRS	12.5	107
CA	Kern-Co	93301	Baker	HRS	14.1	77
CA	Kern-Co	93301	Klasic	HWW	14.0	81
CA	Kern-Co	93301	Probrand-775	HRS	13.5	79
CA	Kern-Co	93301	Serra	HRS	13.1	75
CA	Kern-Co	93301	Tadinia	HRS	12.6	91
CA	Kern-Co	93301	UC839	HRS	13.2	88
CA	Kern-Co	93301	UC842	HRS	14.1	88
CA	Kern-Co	93301	UC849	HWS	13.9	98
CA	Kern-Co	93301	UC850	Club	12.8	50
CA	Kern-Co	93301	UC851	HWS	12.9	105
CA	Kern-Co	93301	Yecora-Rojo	HRS	14.4	92
CA	Kern-Co	93301	Yecora-Rojo-87W	HRW	14.2	98
CA	Kern-Co	93301	Yolo	HRS	12.5	91
CA	Merced	95340	Anza	HRS	10.7	89
CA	Merced	95340	Baker	HRS	12.7	83
CA	Merced	95340	Klasic	HWW	8.6	67
CA	Merced	95340	Probrand-775	HRS	8.7	73
CA	Merced	95340	Serra	HRS	8.4	74
CA	Merced	95340	Tadinia	HRS	8.1	75
CA	Merced	95340	UC839	HRS	12.0	63
CA	Merced	95340	UC842	HRS	11.9	82
CA	Merced	95340	UC849	HWS	12.7	99



**TABLE 2. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY LOC.**

STATE	REGION	ZIPCODE	VARIETY	CLASS	PRO.	HRD.
CA	Merced	95340	UC850	Club	9.2	45
CA	Merced	95340	UC851	HWS	9.2	82
CA	Merced	95340	Yecora-Rojo	HRS	9.6	80
CA	Merced	95340	Yecora-Rojo-87W	HRW	9.2	87
CA	Merced	95340	Yolo	HRS	8.2	78
CA	Sutter-Co	95901	Anza	HRS	9.5	81
CA	Sutter-Co	95901	Baker	HRS	11.5	86
CA	Sutter-Co	95901	Klasic	HWW	10.2	70
CA	Sutter-Co	95901	Probrand-775	HRS	10.3	80
CA	Sutter-Co	95901	Serra	HRS	10.1	72
CA	Sutter-Co	95901	Tadinia	HRS	9.9	82
CA	Sutter-Co	95901	UC839	HRS	10.6	80
CA	Sutter-Co	95901	UC842	HRS	11.3	83
CA	Sutter-Co	95901	UC849	HWS	10.7	87
CA	Sutter-Co	95901	UC850	Club	10.1	39
CA	Sutter-Co	95901	UC851	HWS	10.6	88
CA	Sutter-Co	95901	Yecora-Rojo	HRS	10.3	79
CA	Sutter-Co	95901	Yecora-Rojo-87W	HRW	10.2	78
CA	Sutter-Co	95901	Yolo	HRS	8.7	83
CO	Berthoud	80513	Abilene	HRW	12.8	80
CO	Berthoud	80513	Abilene	HRW	12.9	82
CO	Berthoud	80513	Agseco-7846	HRW	12.0	83
CO	Berthoud	80513	Arapahoe	HRW	12.8	90
CO	Berthoud	80513	Arkan	HRW	13.1	82
CO	Berthoud	80513	Bounty-205	HRW	11.8	58
CO	Berthoud	80513	Bronco	HRW	11.6	83
CO	Berthoud	80513	Century	HRW	11.9	93
CO	Berthoud	80513	Chisholm	HRW	12.9	63
CO	Berthoud	80513	Dodge	HRW	14.1	80
CO	Berthoud	80513	Hawk	HRW	12.0	86
CO	Berthoud	80513	Karl	HRW	13.7	80
CO	Berthoud	80513	Mesa	HRW	13.1	80
CO	Berthoud	80513	Mustang	HRW	11.4	84
CO	Berthoud	80513	Newton	HRW	12.3	89
CO	Berthoud	80513	Norkan	HRW	13.4	82
CO	Berthoud	80513	Pioneer-2154	HRW	11.5	97
CO	Berthoud	80513	Pioneer-2157	HRW	12.7	79
CO	Berthoud	80513	Pioneer-2172	HRW	11.8	95
CO	Berthoud	80513	Pioneer-2180	HRW	12.7	106
CO	Berthoud	80513	Quantum-562	HRW	12.1	82
CO	Berthoud	80513	Quantum-578	HRW	12.7	82
CO	Berthoud	80513	Redland	HRW	11.6	86
CO	Berthoud	80513	Rio-Blanco	HWW	12.4	77
CO	Berthoud	80513	Sierra	HRW	12.1	86
CO	Berthoud	80513	Siouxland	HRW	12.9	84
CO	Berthoud	80513	Stallion	HRW	13.1	85
CO	Berthoud	80513	Tam-101	HRW	12.8	71
CO	Berthoud	80513	Tam-105	HRW	11.7	84
CO	Berthoud	80513	Tam-107	HRW	12.0	85
CO	Berthoud	80513	Tam-108	HRW	11.6	75
CO	Berthoud	80513	Tam-200	HRW	11.7	85

TABLE 2. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY LOC.

STATE	REGION	ZIPCODE	VARIETY	CLASS	PRO.	HRD.
CO	Berthoud	80513	Thunderbird	HRW	12.6	74
CO	Berthoud	80513	Trailblazer	HRW	12.7	90
CO	Berthoud	80513	Victory	HRW	13.1	96
CO	Berthoud	80513	Waco	HRW	12.6	85
KS	Brown-Co	66434	Abilene	HRW	13.8	73
KS	Brown-Co	66434	Agseco-7837	HRW	14.2	61
KS	Brown-Co	66434	Agseco-7846	HRW	13.1	65
KS	Brown-Co	66434	Arkan	HRW	13.9	66
KS	Brown-Co	66434	Becker	SRW	12.3	19
KS	Brown-Co	66434	Bounty-206	HRW	14.5	74
KS	Brown-Co	66434	Bounty-WH52498	HRW	14.2	59
KS	Brown-Co	66434	Caldwell	SRW	12.7	24
KS	Brown-Co	66434	Cardinal	SRW	12.7	21
KS	Brown-Co	66434	Century	HRW	12.8	63
KS	Brown-Co	66434	Chisholm	HRW	14.8	45
KS	Brown-Co	66434	Colt	HRW	14.1	68
KS	Brown-Co	66434	Dodge	HRW	16.2	72
KS	Brown-Co	66434	Hancock	SRW	13.7	63
KS	Brown-Co	66434	Karl	HRW	16.2	68
KS	Brown-Co	66434	Larned	HRW	12.3	68
KS	Brown-Co	66434	Lincoln	SRW	13.3	30
KS	Brown-Co	66434	Mesa	HRW	13.8	67
KS	Brown-Co	66434	Newton	HRW	12.3	56
KS	Brown-Co	66434	Norkan	HRW	14.0	63
KS	Brown-Co	66434	Pioneer-2157	HRW	14.7	55
KS	Brown-Co	66434	Pioneer-2163	HRW	13.1	59
KS	Brown-Co	66434	Pioneer-2172	HRW	14.2	77
KS	Brown-Co	66434	Pioneer-2551	SRW	13.2	22
KS	Brown-Co	66434	Quantum-561	HRW	14.6	42
KS	Brown-Co	66434	Quantum-574	HRW	15.2	53
KS	Brown-Co	66434	Redland	HRW	11.8	64
KS	Brown-Co	66434	Rio-Blanco	HWW	13.2	72
KS	Brown-Co	66434	Scout-66	HRW	13.3	73
KS	Brown-Co	66434	Sierra	HRW	14.1	65
KS	Brown-Co	66434	Siouxland	HRW	13.4	74
KS	Brown-Co	66434	Star-Seed-830	HRW	14.1	62
KS	Brown-Co	66434	Tam-107	HRW	12.5	74
KS	Brown-Co	66434	Tam-108	HRW	11.9	53
KS	Brown-Co	66434	Tam-200	HRW	13.6	59
KS	Brown-Co	66434	Thunderbird	HRW	14.7	72
KS	Brown-Co	66434	Victory	HRW	12.1	15
KS	Ellis-Co	67601	Abilene	HRW	15.8	79
KS	Ellis-Co	67601	Agseco-7805	HRW	14.0	72
KS	Ellis-Co	67601	Agseco-7833	HRW	15.8	63
KS	Ellis-Co	67601	Agseco-7837	HRW	15.5	73
KS	Ellis-Co	67601	Agseco-7846	HRW	14.9	60
KS	Ellis-Co	67601	Arkan	HRW	15.3	61
KS	Ellis-Co	67601	Bronco	HRW	14.7	62
KS	Ellis-Co	67601	Century	HRW	14.7	80
KS	Ellis-Co	67601	Cleopatra-16	HRW	16.8	79
KS	Ellis-Co	67601	Cleopatra-3	HRW	16.6	77

TABLE 2. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY LOC.

STATE	REGION	ZIPCODE	VARIETY	CLASS	PRO.	HRD.
KS	Ellis-Co	67601	Dodge	HRW	17.0	81
KS	Ellis-Co	67601	KS84HW196	HRW	15.1	69
KS	Ellis-Co	67601	Karl	HRW	17.6	71
KS	Ellis-Co	67601	Larned	HRW	15.1	78
KS	Ellis-Co	67601	MBS-8625	HRW	16.0	64
KS	Ellis-Co	67601	Mesa	HRW	15.3	69
KS	Ellis-Co	67601	Pioneer-2157	HRW	16.0	55
KS	Ellis-Co	67601	Pioneer-2163	HRW	14.4	62
KS	Ellis-Co	67601	Pioneer-2172	HRW	15.6	85
KS	Ellis-Co	67601	Quantum-562	HRW	15.3	62
KS	Ellis-Co	67601	Rio-Blanco	HWW	15.1	63
KS	Ellis-Co	67601	Scout-66	HRW	15.0	81
KS	Ellis-Co	67601	Sierra	HRW	15.0	71
KS	Ellis-Co	67601	Siouxland	HRW	15.3	71
KS	Ellis-Co	67601	Tam-107	HRW	13.5	74
KS	Ellis-Co	67601	Tam-200	HRW	14.6	68
KS	Ellis-Co	67601	Thunderbird	HRW	15.5	75
KS	Ellis-Co	67601	Triumph-64	HRW	16.1	71
KS	Ellis-Co	67601	Victory	HRW	15.5	74
KS	Finney-Co	67846	Abilene-Dryland	HRW	17.0	63
KS	Finney-Co	67846	Abilene-Irrigated	HRW	13.9	55
KS	Finney-Co	67846	Agseco-7805-Dryland	HRW	13.7	70
KS	Finney-Co	67846	Agseco-7805-Irrigated	HRW	13.6	64
KS	Finney-Co	67846	Agseco-7837-Dryland	HRW	15.8	63
KS	Finney-Co	67846	Agseco-7837-Irrigated	HRW	13.4	56
KS	Finney-Co	67846	Agseco-7846-Dryland	HRW	15.9	58
KS	Finney-Co	67846	Agseco-7846-Irrigated	HRW	12.9	53
KS	Finney-Co	67846	Agseco-7853-Irrigated	HRW	14.1	57
KS	Finney-Co	67846	Arkan-Irrigated	HRW	13.5	59
KS	Finney-Co	67846	Bounty-206-Dryland	HRW	16.7	81
KS	Finney-Co	67846	Bounty-206-Irrigated	HRW	13.5	77
KS	Finney-Co	67846	Bounty-WH52498-Exp-Dryland	HRW	17.2	63
KS	Finney-Co	67846	Bounty-WH52498-Irrigated	HRW	13.8	65
KS	Finney-Co	67846	Bronco-Dryland	HRW	14.5	61
KS	Finney-Co	67846	Century-Dryland	HRW	14.8	75
KS	Finney-Co	67846	Century-Irrigated	HRW	12.9	64
KS	Finney-Co	67846	Cleopatra-(Red)-Dryland	HRW	17.3	80
KS	Finney-Co	67846	Dodge-Irrigated	HRW	14.1	57
KS	Finney-Co	67846	Hawk-Dryland	HRW	15.7	81
KS	Finney-Co	67846	Hawk-Irrigated	HRW	13.1	61
KS	Finney-Co	67846	KS84HW196-Dryland	HRW	15.8	66
KS	Finney-Co	67846	KS84HW196-Irrigated	HRW	13.4	53
KS	Finney-Co	67846	Karl-Dryland	HRW	18.4	72
KS	Finney-Co	67846	Karl-Irrigated	HRW	13.7	55
KS	Finney-Co	67846	Larned-Dryland	HRW	14.6	77
KS	Finney-Co	67846	MBS-8645-Irrigated	HRW	13.6	53
KS	Finney-Co	67846	Mesa-Dryland	HRW	16.6	76
KS	Finney-Co	67846	Mesa-Irrigated	HRW	13.0	70
KS	Finney-Co	67846	Newton-Dryland	HRW	15.7	67
KS	Finney-Co	67846	Newton-Irrigated	HRW	13.1	60
KS	Finney-Co	67846	Norkan-Dryland	HRW	17.6	74



TABLE 2. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY LOC.

STATE	REGION	ZIPCODE	VARIETY	CLASS	PRO.	HRD.
KS	Finney-Co	67846	Norkan-Irrigated	HRW	14.0	61
KS	Finney-Co	67846	Pioneer-2157-Dryland	HRW	16.1	67
KS	Finney-Co	67846	Pioneer-2157-Irrigated	HRW	12.7	60
KS	Finney-Co	67846	Pioneer-2163-Dryland	HRW	14.9	64
KS	Finney-Co	67846	Pioneer-2163-Irrigated	HRW	12.6	61
KS	Finney-Co	67846	Quantum-562-Dryland	HRW	16.3	64
KS	Finney-Co	67846	Quantum-562-Irrigated	HRW	13.4	54
KS	Finney-Co	67846	Quantum-578-Irrigated	HRW	13.6	51
KS	Finney-Co	67846	Redland-Dryland	HRW	14.7	61
KS	Finney-Co	67846	Rio-Blanco-Irrigated	HWW	13.7	52
KS	Finney-Co	67846	Scout-66-Dryland	HRW	14.8	73
KS	Finney-Co	67846	Sierra-Dryland	HRW	15.3	79
KS	Finney-Co	67846	Sierra-Irrigated	HRW	13.5	66
KS	Finney-Co	67846	Siouxland-Dryland	HRW	15.9	74
KS	Finney-Co	67846	Siouxland-Irrigated	HRW	13.6	49
KS	Finney-Co	67846	Tam-107-Dryland	HRW	13.8	72
KS	Finney-Co	67846	Tam-107-Irrigated	HRW	12.5	62
KS	Finney-Co	67846	Tam-200-Dryland	HRW	14.9	50
KS	Finney-Co	67846	Tam-200-Irrigated	HRW	13.7	53
KS	Finney-Co	67846	Thunderbird-Dryland	HRW	16.2	82
KS	Finney-Co	67846	Thunderbird-Irrigated	HRW	13.6	66
KS	Finney-Co	67846	Tut-Dryland	HRW	16.6	79
KS	Finney-Co	67846	Victory-Irrigated	HRW	13.5	55
KS	Franklin-Co	66067	Abilene	HRW	12.7	69
KS	Franklin-Co	66067	Agseco-7837	HRW	12.5	56
KS	Franklin-Co	66067	Agseco-7846	HRW	11.9	67
KS	Franklin-Co	66067	Arkan	HRW	13.2	67
KS	Franklin-Co	66067	BH-206	HRW	13.4	74
KS	Franklin-Co	66067	Becker	SRW	11.3	17
KS	Franklin-Co	66067	Bounty-WH52498	HRW	14.2	65
KS	Franklin-Co	66067	Caldwell	SRW	11.1	27
KS	Franklin-Co	66067	Cardinal	SRW	12.2	30
KS	Franklin-Co	66067	Century	HRW	12.8	64
KS	Franklin-Co	66067	Chisholm	HRW	12.3	52
KS	Franklin-Co	66067	Dodge	HRW	13.0	64
KS	Franklin-Co	66067	Hancock	SRW	12.1	27
KS	Franklin-Co	66067	Karl	HRW	14.2	72
KS	Franklin-Co	66067	Larned	HRW	12.4	68
KS	Franklin-Co	66067	Lincoln	SRW	11.1	22
KS	Franklin-Co	66067	MBS-8645	HRW	13.5	66
KS	Franklin-Co	66067	Mesa	HRW	12.7	62
KS	Franklin-Co	66067	Mustang	HRW	12.1	69
KS	Franklin-Co	66067	Newton	HRW	12.5	63
KS	Franklin-Co	66067	Norkan	HRW	13.6	65
KS	Franklin-Co	66067	Pioneer-2157	HRW	14.1	55
KS	Franklin-Co	66067	Pioneer-2163	HRW	12.1	67
KS	Franklin-Co	66067	Pioneer-2172	HRW	12.3	70
KS	Franklin-Co	66067	Pioneer-2551	SRW	12.1	25
KS	Franklin-Co	66067	Quantum-574	HRW	13.0	53
KS	Franklin-Co	66067	Rio-Blanco	HWW	12.5	60
KS	Franklin-Co	66067	Scout-66	HRW	12.8	70



TABLE 2. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY LOC.

STATE	REGION	ZIPCODE	VARIETY	CLASS	PRO.	HRD.
KS	Franklin-Co	66067	Sierra	HRW	13.0	62
KS	Franklin-Co	66067	Siouxland	HRW	12.7	60
KS	Franklin-Co	66067	Tam-107	HRW	11.7	76
KS	Franklin-Co	66067	Tam-108	HRW	11.9	49
KS	Franklin-Co	66067	Tam-200	HRW	12.1	59
KS	Franklin-Co	66067	Terra-152	SRW	11.5	62
KS	Franklin-Co	66067	Terra-201	SRW	11.8	23
KS	Franklin-Co	66067	Terra-HR150	SRW	12.5	61
KS	Franklin-Co	66067	Terra-HR151	SRW	11.6	59
KS	Franklin-Co	66067	Terra-SR86	SRW	11.6	27
KS	Franklin-Co	66067	Terra-SR87	SRW	11.4	23
KS	Franklin-Co	66067	Thunderbird	HRW	13.2	65
KS	Franklin-Co	66067	Triumph	HRW	13.8	63
KS	Franklin-Co	66067	Victory	HRW	12.7	68
KS	Garden-City	67846	Abilene	HRW	13.6	66
KS	Garden-City	67846	Agseco-7846	HRW	12.9	54
KS	Garden-City	67846	Arapahoe	HRW	13.2	75
KS	Garden-City	67846	Arkan	HRW	13.5	60
KS	Garden-City	67846	Bounty-205	HRW	13.3	45
KS	Garden-City	67846	Bronco	HRW	12.5	61
KS	Garden-City	67846	Century	HRW	12.7	68
KS	Garden-City	67846	Chisholm	HRW	12.5	46
KS	Garden-City	67846	Dodge	HRW	14.5	60
KS	Garden-City	67846	Hawk	HRW	12.8	73
KS	Garden-City	67846	Karl	HRW	13.7	63
KS	Garden-City	67846	Mesa	HRW	13.0	64
KS	Garden-City	67846	Mustang	HRW	12.9	66
KS	Garden-City	67846	Newton	HRW	13.3	67
KS	Garden-City	67846	Norkan	HRW	14.0	70
KS	Garden-City	67846	Pioneer-2154	HRW	13.6	82
KS	Garden-City	67846	Pioneer-2157	HRW	13.7	56
KS	Garden-City	67846	Pioneer-2173	HRW	13.4	76
KS	Garden-City	67846	Pioneer-2180	HRW	13.4	79
KS	Garden-City	67846	Quantum-562	HRW	13.1	67
KS	Garden-City	67846	Quantum-578	HRW	13.2	63
KS	Garden-City	67846	Redland	HRW	12.6	72
KS	Garden-City	67846	Rio-Blanco	HWW	13.4	62
KS	Garden-City	67846	Sierra	HRW	13.7	71
KS	Garden-City	67846	Siouxland	HRW	13.3	80
KS	Garden-City	67846	Stallion	HRW	13.2	57
KS	Garden-City	67846	Tam-101	HRW	14.0	71
KS	Garden-City	67846	Tam-105	HRW	12.7	70
KS	Garden-City	67846	Tam-107	HRW	12.2	75
KS	Garden-City	67846	Tam-108	HRW	12.2	55
KS	Garden-City	67846	Tam-200	HRW	13.2	76
KS	Garden-City	67846	Thunderbird	HRW	13.6	77
KS	Garden-City	67846	Trailblazer	HRW	13.8	70
KS	Garden-City	67846	Victory	HRW	12.9	74
KS	Garden-City	67846	Waco	HRW	14.0	73
KS	Greeley-Co	67879	Abilene-Dryland	HRW	14.6	86
KS	Greeley-Co	67879	Abilene-Irrigated	HRW	13.4	66

TABLE 2. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY LOC.

STATE	REGION	ZIPCODE	VARIETY	CLASS	PRO.	HRD.
KS	Greeley-Co	67879	Agseco-7837-Irrigated	HRW	13.3	56
KS	Greeley-Co	67879	Agseco-7846-Dryland	HRW	13.7	70
KS	Greeley-Co	67879	Agseco-7846-Irrigated	HRW	13.7	52
KS	Greeley-Co	67879	Arapahoe-Irrigated	HRW	13.2	66
KS	Greeley-Co	67879	Arkan-Dryland	HRW	14.7	85
KS	Greeley-Co	67879	Arkan-Irrigated	HRW	13.5	57
KS	Greeley-Co	67879	BH-206-Dryland	HRW	14.6	69
KS	Greeley-Co	67879	Bounty-WH52498-Dryland	HRW	14.3	82
KS	Greeley-Co	67879	Bronco-Dryland	HRW	13.7	68
KS	Greeley-Co	67879	Century-Dryland	HRW	14.0	71
KS	Greeley-Co	67879	Century-Irrigated	HRW	12.3	53
KS	Greeley-Co	67879	Chisholm-Dryland	HRW	13.7	77
KS	Greeley-Co	67879	Chisholm-Irrigated	HRW	13.0	37
KS	Greeley-Co	67879	Cody-Dryland	HRW	14.4	77
KS	Greeley-Co	67879	Colt-Irrigated	HRW	13.2	53
KS	Greeley-Co	67879	Dodge-Irrigated	HRW	15.2	60
KS	Greeley-Co	67879	Hawk-Dryland	HRW	14.1	75
KS	Greeley-Co	67879	Hawk-Irrigated	HRW	12.9	57
KS	Greeley-Co	67879	KS84HW196-Dryland	HRW	14.9	75
KS	Greeley-Co	67879	KS84HW196-Irrigated	HRW	13.2	61
KS	Greeley-Co	67879	Karl-Irrigated	HRW	14.0	55
KS	Greeley-Co	67879	Lamar-Dryland	HRW	14.3	79
KS	Greeley-Co	67879	Mesa-Dryland	HRW	14.3	77
KS	Greeley-Co	67879	Mesa-Irrigated	HRW	12.8	51
KS	Greeley-Co	67879	Newton-Dryland	HRW	13.9	64
KS	Greeley-Co	67879	Newton-Irrigated	HRW	12.9	50
KS	Greeley-Co	67879	Norkan-Dryland	HRW	16.0	80
KS	Greeley-Co	67879	Norkan-Irrigated	HRW	13.8	52
KS	Greeley-Co	67879	Pioneer-2157-Dryland	HRW	14.8	62
KS	Greeley-Co	67879	Pioneer-2157-Irrigated	HRW	13.3	41
KS	Greeley-Co	67879	Pioneer-2163-Irrigated	HRW	12.9	58
KS	Greeley-Co	67879	Quantum-562-Dryland	HRW	14.1	66
KS	Greeley-Co	67879	Quantum-562-Irrigated	HRW	13.0	54
KS	Greeley-Co	67879	Quantum-578-Irrigated	HRW	13.2	50
KS	Greeley-Co	67879	Rio-Blanco-Dryland	HWW	14.8	71
KS	Greeley-Co	67879	Rio-Blanco-Irrigated	HWW	13.4	54
KS	Greeley-Co	67879	Sierra-Dryland	HRW	13.8	71
KS	Greeley-Co	67879	Sierra-Irrigated	HRW	13.2	63
KS	Greeley-Co	67879	Siouxland-Irrigated	HRW	12.5	47
KS	Greeley-Co	67879	Tam-107-Dryland	HRW	13.7	82
KS	Greeley-Co	67879	Tam-107-Irrigated	HRW	12.4	64
KS	Greeley-Co	67879	Tam-108-Irrigated	HRW	12.2	44
KS	Greeley-Co	67879	Tam-200-Dryland	HRW	14.0	66
KS	Greeley-Co	67879	Tam-200-Irrigated	HRW	12.7	49
KS	Greeley-Co	67879	Thunderbird-Dryland	HRW	14.4	79
KS	Greeley-Co	67879	Thunderbird-Irrigated	HRW	13.1	60
KS	Greeley-Co	67879	Tut-Dryland	HRW	14.1	78
KS	Greeley-Co	67879	Victory-Irrigated	HRW	13.0	58
KS	Harvey-Co	67114	Abilene	HRW	16.8	71
KS	Harvey-Co	67114	Agseco-7837	HRW	17.1	64
KS	Harvey-Co	67114	Agseco-7846	HRW	16.4	67

**TABLE 2. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY LOC.**

STATE	REGION	ZIPCODE	VARIETY	CLASS	PRO.	HRD.
KS	Harvey-Co	67114	Arkan	HRW	17.2	61
KS	Harvey-Co	67114	BH-206	HRW	17.1	71
KS	Harvey-Co	67114	Bounty-WH52498	HRW	17.2	60
KS	Harvey-Co	67114	Bronco	HRW	16.4	56
KS	Harvey-Co	67114	Century	HRW	15.4	63
KS	Harvey-Co	67114	Dodge	HRW	17.8	65
KS	Harvey-Co	67114	Hawk	HRW	16.0	69
KS	Harvey-Co	67114	KS8010*-72-Exp	HRW	16.2	65
KS	Harvey-Co	67114	KS8010-1-4-2-Exp	HRW	16.9	62
KS	Harvey-Co	67114	Karl	HRW	17.9	70
KS	Harvey-Co	67114	Larned	HRW	16.4	69
KS	Harvey-Co	67114	Mesa	HRW	16.2	70
KS	Harvey-Co	67114	Mustang	HRW	16.5	66
KS	Harvey-Co	67114	Newton	HRW	15.8	61
KS	Harvey-Co	67114	Norkan	HRW	17.3	67
KS	Harvey-Co	67114	Pioneer-2157	HRW	17.1	55
KS	Harvey-Co	67114	Pioneer-2163	HRW	15.3	71
KS	Harvey-Co	67114	Pioneer-2180	HRW	16.2	74
KS	Harvey-Co	67114	Quantum-574	HRW	16.9	54
KS	Harvey-Co	67114	Rio-Blanco	HWW	16.9	67
KS	Harvey-Co	67114	Scout-66	HRW	16.1	69
KS	Harvey-Co	67114	Sierra	HRW	16.3	57
KS	Harvey-Co	67114	Siouxland	HRW	16.4	66
KS	Harvey-Co	67114	Tam-107	HRW	14.6	73
KS	Harvey-Co	67114	Tam-108	HRW	15.2	54
KS	Harvey-Co	67114	Tam-200	HRW	16.2	53
KS	Harvey-Co	67114	Thunderbird	HRW	16.7	70
KS	Harvey-Co	67114	Triumph-64	HRW	16.8	60
KS	Harvey-Co	67114	Victory	HRW	16.6	66
KS	Labette	67350	Abilene	HRW	12.5	64
KS	Labette	67350	Agseco-7837	HRW	13.5	70
KS	Labette	67350	Agseco-7846	HRW	11.5	67
KS	Labette	67350	Arkan	HRW	12.6	64
KS	Labette	67350	Bounty-206	HRW	13.1	65
KS	Labette	67350	Caldwell	SRW	11.2	27
KS	Labette	67350	Cardinal	SRW	12.4	26
KS	Labette	67350	Century	HRW	12.3	57
KS	Labette	67350	Chisholm	HRW	11.6	48
KS	Labette	67350	Dodge	HRW	13.9	54
KS	Labette	67350	KS8010*-72-Exp	HRW	12.5	70
KS	Labette	67350	KS8010-1-4-2-Exp	HRW	13.1	60
KS	Labette	67350	Karl	HRW	13.9	59
KS	Labette	67350	Larned	HRW	12.7	59
KS	Labette	67350	Lincoln	SRW	11.4	19
KS	Labette	67350	MBS-8645-Exp	HRW	13.1	63
KS	Labette	67350	Mesa	HRW	11.8	67
KS	Labette	67350	Newton	HRW	11.9	58
KS	Labette	67350	Norkan	HRW	13.1	63
KS	Labette	67350	Pioneer-2157	HRW	13.0	66
KS	Labette	67350	Pioneer-2163	HRW	12.6	66
KS	Labette	67350	Pioneer-2172	HRW	12.2	80



TABLE 2. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY LOC.

STATE	REGION	ZIPCODE	VARIETY	CLASS	PRO.	HRD.
KS	Labette	67350	Pioneer-2180	HRW	12.6	83
KS	Labette	67350	Pioneer-2551	SRW	12.8	30
KS	Labette	67350	Quantun-574	HRW	13.5	50
KS	Labette	67350	Rio-Blanco	HWW	12.4	58
KS	Labette	67350	Scout-66	HRW	12.9	76
KS	Labette	67350	Sierra	HRW	13.0	68
KS	Labette	67350	Siouxland	HRW	12.4	64
KS	Labette	67350	Tam-107	HRW	11.5	79
KS	Labette	67350	Tam-200	HRW	12.1	53
KS	Labette	67350	Terra-201-Exp	SRW	12.4	29
KS	Labette	67350	Terra-HR150	SRW	13.7	59
KS	Labette	67350	Terra-HR151	SRW	12.5	50
KS	Labette	67350	Terra-HR152-Exp	SRW	11.2	61
KS	Labette	67350	Terra-SR86	SRW	11.5	31
KS	Labette	67350	Terra-SR87	SRW	11.9	16
KS	Labette	67350	Thunderbird	HRW	13.2	79
KS	Labette	67350	Triumph-64	HRW	13.2	60
KS	Labette	67350	Twain	SRW	12.8	25
KS	Reno-Co	67501	Abilene	HRW	14.8	50
KS	Reno-Co	67501	Agseco-7805	HRW	13.8	68
KS	Reno-Co	67501	Agseco-7833	HRW	14.2	57
KS	Reno-Co	67501	Agseco-7837	HRW	15.5	64
KS	Reno-Co	67501	Agseco-7846	HRW	14.1	53
KS	Reno-Co	67501	Arkan	HRW	15.4	53
KS	Reno-Co	67501	Bounty-206	HRW	16.2	65
KS	Reno-Co	67501	Bounty-WH52498	HRW	15.9	68
KS	Reno-Co	67501	Bronco	HRW	14.5	56
KS	Reno-Co	67501	Century	HRW	14.3	70
KS	Reno-Co	67501	Dodge	HRW	16.8	58
KS	Reno-Co	67501	Hawk	HRW	14.0	62
KS	Reno-Co	67501	KS8010*-72-Exp	HRW	14.9	65
KS	Reno-Co	67501	KS8010-1-4-2-Exp	HRW	14.8	65
KS	Reno-Co	67501	KS84HW196	HRW	14.8	63
KS	Reno-Co	67501	Karl	HRW	16.6	70
KS	Reno-Co	67501	Larned	HRW	14.1	66
KS	Reno-Co	67501	MBS-8645	HRW	15.7	56
KS	Reno-Co	67501	Mesa	HRW	15.2	73
KS	Reno-Co	67501	Mustang	HRW	15.0	54
KS	Reno-Co	67501	Newton	HRW	14.6	60
KS	Reno-Co	67501	Norkan	HRW	16.0	56
KS	Reno-Co	67501	Pioneer-2157	HRW	15.5	55
KS	Reno-Co	67501	Pioneer-2163	HRW	13.8	60
KS	Reno-Co	67501	Pioneer-2180	HRW	14.8	85
KS	Reno-Co	67501	Quantum-574	HRW	16.0	44
KS	Reno-Co	67501	Rio-Blanco	HWW	15.1	65
KS	Reno-Co	67501	Scout-66	HRW	14.7	65
KS	Reno-Co	67501	Sierra	HRW	14.7	60
KS	Reno-Co	67501	Siouxland	HRW	14.2	62
KS	Reno-Co	67501	Tam-107	HRW	13.3	72
KS	Reno-Co	67501	Tam-108	HRW	13.7	38
KS	Reno-Co	67501	Tam-200	HRW	14.3	44

**TABLE 2. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY LOC.**

STATE	REGION	ZIPCODE	VARIETY	CLASS	PRO.	HRD.
KS	Reno-Co	67501	Thunderbird	HRW	15.3	64
KS	Reno-Co	67501	Triumph-64	HRW	15.1	55
KS	Reno-Co	67501	Victory	HRW	15.0	57
KS	Republic-Co	66935	Abilene	HRW	15.8	68
KS	Republic-Co	66935	Agseco-7805	HRW	14.0	64
KS	Republic-Co	66935	Agseco-7833	HRW	15.3	63
KS	Republic-Co	66935	Agseco-7837	HRW	15.6	64
KS	Republic-Co	66935	Agseco-7846	HRW	15.1	60
KS	Republic-Co	66935	Arapahoe	HRW	14.8	67
KS	Republic-Co	66935	Bronco	HRW	15.0	64
KS	Republic-Co	66935	Century	HRW	14.6	71
KS	Republic-Co	66935	Cody	HRW	14.5	67
KS	Republic-Co	66935	Colt	HRW	15.0	58
KS	Republic-Co	66935	Dodge	HRW	16.9	68
KS	Republic-Co	66935	KS8010*-72-Exp	HRW	15.1	62
KS	Republic-Co	66935	KS8010-1-4-2-Exp	HRW	14.9	71
KS	Republic-Co	66935	Karl	HRW	17.1	73
KS	Republic-Co	66935	Larned	HRW	14.4	73
KS	Republic-Co	66935	Mesa	HRW	15.5	67
KS	Republic-Co	66935	Newton	HRW	14.7	61
KS	Republic-Co	66935	Norkan	HRW	15.5	70
KS	Republic-Co	66935	Pioneer-2157	HRW	15.4	61
KS	Republic-Co	66935	Pioneer-2163	HRW	14.6	73
KS	Republic-Co	66935	Pioneer-2180	HRW	15.9	81
KS	Republic-Co	66935	Quantum-561	HRW	15.2	54
KS	Republic-Co	66935	Quantum-562	HRW	14.5	56
KS	Republic-Co	66935	Rio-Blanco	HWW	15.1	59
KS	Republic-Co	66935	Scout-66	HRW	15.1	74
KS	Republic-Co	66935	Sierra	HRW	15.0	64
KS	Republic-Co	66935	Siouxland	HRW	15.1	68
KS	Republic-Co	66935	Tam-107	HRW	13.9	80
KS	Republic-Co	66935	Tam-200	HRW	14.5	58
KS	Republic-Co	66935	Thunderbird	HRW	15.4	75
KS	Republic-Co	66935	Victory	HRW	15.1	66
KS	Stafford-Co	67576	Agseco-7837-Irrigated	HRW	16.5	59
KS	Stafford-Co	67576	Agseco-7846-Irrigated	HRW	15.9	52
KS	Stafford-Co	67576	Agseco-7853-Irrigated	HRW	16.4	46
KS	Stafford-Co	67576	Bounty-206-Irrigated	HRW	17.9	61
KS	Stafford-Co	67576	Century-Irrigated	HRW	15.1	59
KS	Stafford-Co	67576	Dodge-Irrigated	HRW	15.9	50
KS	Stafford-Co	67576	KS8010*-72-Exp-Irrigated	HRW	16.4	58
KS	Stafford-Co	67576	KS8010-1-4-2-Exp-Irrigated	HRW	16.5	53
KS	Stafford-Co	67576	KS84HW196-Irrigated	HRW	15.2	49
KS	Stafford-Co	67576	Karl-Irrigated	HRW	18.7	67
KS	Stafford-Co	67576	MBS-8645-Irrigated	HRW	16.5	52
KS	Stafford-Co	67576	Mustang-Irrigated	HRW	16.0	59
KS	Stafford-Co	67576	Newton-Irrigated	HRW	15.0	47
KS	Stafford-Co	67576	Pioneer-2157-Irrigated	HRW	16.6	47
KS	Stafford-Co	67576	Pioneer-2180-Irrigated	HRW	16.8	70
KS	Stafford-Co	67576	Siouxland-Irrigated	HRW	16.8	61
KS	Stafford-Co	67576	Tam-107-Irrigated	HRW	14.3	52

TABLE 2. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY LOC.

STATE	REGION	ZIPCODE	VARIETY	CLASS	PRO.	HRD.
KS	Stafford-Co	67576	Tam-108-Irrigated	HRW	14.9	39
KS	Stafford-Co	67576	Tam-200-Irrigated	HRW	15.2	43
KS	Stafford-Co	67576	Victory-Irrigated	HRW	15.5	61
KS	Thomas-Co	67701	Abilene-Dryland	HRW	13.4	59
KS	Thomas-Co	67701	Abilene-Irrigated	HRW	12.3	63
KS	Thomas-Co	67701	Agseco-7805-Dryland	HRW	12.3	59
KS	Thomas-Co	67701	Agseco-7805-Irrigated	HRW	12.2	71
KS	Thomas-Co	67701	Agseco-7837-Dryland	HRW	13.1	68
KS	Thomas-Co	67701	Agseco-7837-Irrigated	HRW	12.2	54
KS	Thomas-Co	67701	Agseco-7846-Dryland	HRW	12.3	51
KS	Thomas-Co	67701	Agseco-7846-Irrigated	HRW	12.1	67
KS	Thomas-Co	67701	Arapahoe-Dryland	HRW	13.3	76
KS	Thomas-Co	67701	Arapahoe-Irrigated	HRW	12.5	77
KS	Thomas-Co	67701	Arkan-Dryland	HRW	13.8	58
KS	Thomas-Co	67701	Arkan-Irrigated	HRW	12.7	63
KS	Thomas-Co	67701	Bounty-206-Dryland	HRW	12.6	68
KS	Thomas-Co	67701	Bounty-206-Irrigated	HRW	12.4	74
KS	Thomas-Co	67701	Bounty-WH52498-Dryland	HRW	13.4	57
KS	Thomas-Co	67701	Bounty-WH52498-Irrigated	HRW	12.8	62
KS	Thomas-Co	67701	Bronco-Dryland	HRW	12.0	56
KS	Thomas-Co	67701	Carson-Dryland	HRW	12.3	66
KS	Thomas-Co	67701	Century-Dryland	HRW	12.5	64
KS	Thomas-Co	67701	Century-Irrigated	HRW	11.0	72
KS	Thomas-Co	67701	Cody-Dryland	HRW	12.3	67
KS	Thomas-Co	67701	Cody-Irrigated	HRW	12.2	78
KS	Thomas-Co	67701	Colt-Dryland	HRW	12.7	53
KS	Thomas-Co	67701	Colt-Irrigated	HRW	12.3	67
KS	Thomas-Co	67701	Dodge-Dryland	HRW	14.8	65
KS	Thomas-Co	67701	Dodge-Irrigated	HRW	13.8	61
KS	Thomas-Co	67701	Hawk-Dryland	HRW	11.9	71
KS	Thomas-Co	67701	Hawk-Irrigated	HRW	11.5	68
KS	Thomas-Co	67701	KS84HW196-Dryland	HRW	12.7	63
KS	Thomas-Co	67701	KS84HW196-Irrigated	HRW	12.2	65
KS	Thomas-Co	67701	Karl-Dryland	HRW	15.1	66
KS	Thomas-Co	67701	Karl-Irrigated	HRW	13.6	64
KS	Thomas-Co	67701	Lamar-Dryland	HRW	12.7	69
KS	Thomas-Co	67701	Larned-Dryland	HRW	12.3	67
KS	Thomas-Co	67701	MBS-8625-Irrigated	HRW	12.8	59
KS	Thomas-Co	67701	Mesa-Dryland	HRW	13.1	65
KS	Thomas-Co	67701	Mesa-Irrigated	HRW	12.4	70
KS	Thomas-Co	67701	Newton-Dryland	HRW	12.1	57
KS	Thomas-Co	67701	Newton-Irrigated	HRW	11.3	68
KS	Thomas-Co	67701	Norkan-Dryland	HRW	13.7	66
KS	Thomas-Co	67701	Norkan-Irrigated	HRW	12.7	67
KS	Thomas-Co	67701	Pioneer-2163-Dryland	HRW	12.5	60
KS	Thomas-Co	67701	Pioneer-2163-Irrigated	HRW	12.3	60
KS	Thomas-Co	67701	Quantum-562-Dryland	HRW	12.4	62
KS	Thomas-Co	67701	Quantum-562-Irrigated	HRW	12.0	69
KS	Thomas-Co	67701	Quantum-578-Irrigated	HRW	12.6	59
KS	Thomas-Co	67701	Redland-Dryland	HRW	11.9	66
KS	Thomas-Co	67701	Rio-Blanco-Dryland	HWW	12.8	58



**TABLE 2. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY LOC.**

STATE	REGION	ZIPCODE	VARIETY	CLASS	PRO.	HRD.
KS	Thomas-Co	67701	Rio-Blanco-Irrigated	HWW	12.2	69
KS	Thomas-Co	67701	Scout-66-Dryland	HRW	12.1	69
KS	Thomas-Co	67701	Sierra-Dryland	HRW	12.7	63
KS	Thomas-Co	67701	Sierra-Irrigated	HRW	12.6	73
KS	Thomas-Co	67701	Siouxland-Dryland	HRW	12.7	69
KS	Thomas-Co	67701	Siouxland-Irrigated	HRW	11.9	78
KS	Thomas-Co	67701	Tam-107-Dryland	HRW	11.9	74
KS	Thomas-Co	67701	Tam-107-Irrigated	HRW	11.7	82
KS	Thomas-Co	67701	Tam-108-Dryland	HRW	11.6	46
KS	Thomas-Co	67701	Tam-108-Irrigated	HRW	11.7	52
KS	Thomas-Co	67701	Tam-200-Dryland	HRW	12.3	58
KS	Thomas-Co	67701	Tam-200-Irrigated	HRW	11.7	54
KS	Thomas-Co	67701	Thunderbird-Dryland	HRW	13.3	72
KS	Thomas-Co	67701	Thunderbird-Irrigated	HRW	12.5	76
KS	Thomas-Co	67701	Victory-Dryland	HRW	13.1	68
KS	Thomas-Co	67701	Victory-Irrigated	HRW	12.4	75
MN	Crookston	56716	Butte-86	HRS	16.4	99
MN	Crookston	56716	Celtic	HRS	16.0	94
MN	Crookston	56716	Guard	HRS	15.8	80
MN	Crookston	56716	Marshall	HRS	16.0	82
MN	Crookston	56716	Minnpro	HRS	19.0	99
MN	Crookston	56716	Pioneer-2369	HRS	17.1	98
MN	Crookston	56716	Stoa	HRS	16.3	96
MN	Crookston	56716	Telemark	HRS	16.7	96
MN	Crookston	56716	Vance	HRS	16.0	80
MN	Crookston	56716	Wheaton	HRS	15.6	83
MN	Hancock	56244	Butte-86	HRS	16.4	102
MN	Hancock	56244	Len	HRS	16.1	98
MN	Hancock	56244	Marshall	HRS	14.6	87
MN	Hancock	56244	Pioneer-2369	HRS	15.6	105
MN	Hancock	56244	Pioneer-2370	HRS	15.4	90
MN	Hancock	56244	Pioneer-2375	HRS	15.3	107
MN	Hancock	56244	Pioneer-2385	HRS	16.0	90
MN	Hancock	56244	Stoa	HRS	16.0	98
MN	Lamberton	56152	Butte-86	HRS	16.6	94
MN	Lamberton	56152	Celtic	HRS	16.8	88
MN	Lamberton	56152	Guard	HRS	16.3	76
MN	Lamberton	56152	Marshall	HRS	16.0	86
MN	Lamberton	56152	Minnpro	HRS	18.3	85
MN	Lamberton	56152	Pioneer-2369	HRS	17.3	92
MN	Lamberton	56152	Stoa	HRS	16.2	86
MN	Lamberton	56152	Telemark	HRS	16.8	82
MN	Lamberton	56152	Vance	HRS	16.8	69
MN	Lamberton	56152	Wheaton	HRS	16.5	78
MN	Morris	56267	Brule	HRW	16.0	69
MN	Morris	56267	Butte-86	HRS	14.2	89
MN	Morris	56267	Celtic	HRS	15.5	91
MN	Morris	56267	Marshall	HRS	15.3	84
MN	Morris	56267	Minnpro	HRS	16.9	99
MN	Morris	56267	Pioneer-2369	HRS	15.0	93
MN	Morris	56267	Rose	HRW	16.6	78

TABLE 2. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY LOC.

STATE	REGION	ZIPCODE	VARIETY	CLASS	PRO.	HRD.
MN	Morris	56267	Roughrider	HRW	18.1	81
MN	Morris	56267	Stoa	HRS	14.4	87
MN	Morris	56267	Telemark	HRS	15.4	83
MN	Morris	56267	Thunderbird	HRW	16.5	72
MN	Morris	56267	Vance	HRS	14.8	80
MN	Morris	56267	Wheaton	HRS	14.7	80
MN	Rosemount	55068	Brule	HRW	12.2	75
MN	Rosemount	55068	Rose	HRW	12.8	84
MN	Rosemount	55068	Roughrider	HRW	13.0	72
MN	Rosemount	55068	Thunderbird	HRW	11.8	67
MN	St-Paul	55101	Butte-86	HRS	17.8	93
MN	St-Paul	55101	Celtic	HRS	18.2	97
MN	St-Paul	55101	Guard	HRS	17.6	82
MN	St-Paul	55101	Marshall	HRS	18.1	85
MN	St-Paul	55101	Minnpro	HRS	20.1	91
MN	St-Paul	55101	Pioneer-2369	HRS	18.6	97
MN	St-Paul	55101	Stoa	HRS	18.7	89
MN	St-Paul	55101	Telemark	HRS	18.0	77
MN	St-Paul	55101	Vance	HRS	19.3	83
MN	St-Paul	55101	Wheaton	HRS	18.9	83
MN	Stephen	56757	Butte-86	HRS	15.8	93
MN	Stephen	56757	Celtic	HRS	15.9	90
MN	Stephen	56757	Marshall	HRS	16.2	88
MN	Stephen	56757	Minnpro	HRS	17.3	95
MN	Stephen	56757	Pioneer-2369	HRS	16.4	97
MN	Stephen	56757	Stoa	HRS	15.0	87
MN	Stephen	56757	Telemark	HRS	16.4	81
MN	Stephen	56757	Vance	HRS	15.7	90
MN	Stephen	56757	Wheaton	HRS	15.3	89
ND	Bathgate	58216	Butte-86	HRS	15.0	96
ND	Bathgate	58216	Len	HRS	14.3	92
ND	Bathgate	58216	Marshall	HRS	14.1	86
ND	Bathgate	58216	Pioneer-2369	HRS	14.0	98
ND	Bathgate	58216	Pioneer-2370	HRS	13.7	95
ND	Bathgate	58216	Pioneer-2375	HRS	14.3	97
ND	Bathgate	58216	Pioneer-2385	HRS	14.5	93
ND	Bathgate	58216	Stoa	HRS	14.3	94
ND	Casselton	58012	Butte-86	HRS	16.4	108
ND	Casselton	58012	Len	HRS	17.1	109
ND	Casselton	58012	Marshall	HRS	15.9	103
ND	Casselton	58012	Pioneer-2369	HRS	16.0	113
ND	Casselton	58012	Pioneer-2370	HRS	16.6	103
ND	Casselton	58012	Pioneer-2375	HRS	15.9	104
ND	Casselton	58012	Pioneer-2385	HRS	16.5	100
ND	Casselton	58012	Stoa	HRS	16.3	103
ND	Dickinson	58601	Amidon	HRS	15.9	108
ND	Dickinson	58601	Butte-86	HRS	16.6	96
ND	Dickinson	58601	Field	HRS	16.3	85
ND	Dickinson	58601	Grandin	HRS	17.5	98
ND	Dickinson	58601	Gus	HRS	17.7	99
ND	Dickinson	58601	Len	HRS	17.3	90

TABLE 2. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY LOC.

STATE	REGION	ZIPCODE	VARIETY	CLASS	PRO.	HRD.
ND	Dickinson	58601	Marshall	HRS	16.9	94
ND	Dickinson	58601	Minnpro	HRS	18.3	99
ND	Dickinson	58601	ND-650	HRS	18.1	108
ND	Dickinson	58601	ND-652	HRS	18.2	101
ND	Dickinson	58601	ND-653	HRS	16.2	91
ND	Dickinson	58601	ND-654	HRS	16.9	94
ND	Dickinson	58601	Pioneer-2385	HRS	17.4	96
ND	Dickinson	58601	Stoa	HRS	17.1	98
ND	Dickinson	58601	Vance	HRS	17.4	90
ND	Fargo	58102	Amidon	HRS	15.8	113
ND	Fargo	58102	Butte-86	HRS	16.6	99
ND	Fargo	58102	Field	HRS	15.6	90
ND	Fargo	58102	Grandin	HRS	16.6	98
ND	Fargo	58102	Gus	HRS	16.2	100
ND	Fargo	58102	Len	HRS	16.5	95
ND	Fargo	58102	Marshall	HRS	15.1	84
ND	Fargo	58102	Minnpro	HRS	17.0	99
ND	Fargo	58102	ND-650	HRS	17.0	110
ND	Fargo	58102	ND-652	HRS	16.7	103
ND	Fargo	58102	ND-653	HRS	16.5	93
ND	Fargo	58102	ND-654	HRS	17.1	99
ND	Fargo	58102	Pioneer-2385	HRS	17.1	109
ND	Fargo	58102	Stoa	HRS	16.0	94
ND	Fargo	58102	Vance	HRS	15.8	95
ND	Glenfield	58443	Butte-86	HRS	16.8	103
ND	Glenfield	58443	Len	HRS	17.9	96
ND	Glenfield	58443	Marshall	HRS	16.8	91
ND	Glenfield	58443	Pioneer-2369	HRS	15.9	104
ND	Glenfield	58443	Pioneer-2370	HRS	18.1	100
ND	Glenfield	58443	Pioneer-2375	HRS	15.8	99
ND	Glenfield	58443	Pioneer-2385	HRS	17.6	95
ND	Glenfield	58443	Stoa	HRS	17.3	103
ND	Langdon	58249	Amidon	HRS	15.8	102
ND	Langdon	58249	Butte-86	HRS	17.2	96
ND	Langdon	58249	Field	HRS	16.1	81
ND	Langdon	58249	Grandin	HRS	16.7	88
ND	Langdon	58249	Gus	HRS	17.1	94
ND	Langdon	58249	Len	HRS	15.1	89
ND	Langdon	58249	Marshall	HRS	15.0	85
ND	Langdon	58249	Minnpro	HRS	17.0	83
ND	Langdon	58249	ND-650	HRS	17.8	105
ND	Langdon	58249	ND-652	HRS	17.4	105
ND	Langdon	58249	ND-653	HRS	17.0	83
ND	Langdon	58249	ND-654	HRS	17.4	91
ND	Langdon	58249	Pioneer-2385	HRS	16.2	86
ND	Langdon	58249	Stoa	HRS	16.3	84
ND	Langdon	58249	Vance	HRS	16.0	77
ND	Minot	58701	Amidon	HRS	16.5	110
ND	Minot	58701	Butte-86	HRS	15.5	86
ND	Minot	58701	Field	HRS	15.0	82
ND	Minot	58701	Grandin	HRS	16.5	88



TABLE 2. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY LOC.

STATE REGION		ZIPCODE	VARIETY	CLASS	PRO.	HRD.
ND	Minot	58701	Gus	HRS	16.0	93
ND	Minot	58701	Len	HRS	16.3	90
ND	Minot	58701	Marshall	HRS	15.4	78
ND	Minot	58701	Minnpro	HRS	17.2	87
ND	Minot	58701	ND-650	HRS	17.4	97
ND	Minot	58701	ND-652	HRS	16.9	99
ND	Minot	58701	ND-653	HRS	15.6	81
ND	Minot	58701	ND-654	HRS	16.1	91
ND	Minot	58701	Pioneer-2385	HRS	17.1	90
ND	Minot	58701	Stoa	HRS	15.2	86
ND	Minot	58701	Vance	HRS	15.6	81
ND	Williston	58801	Amidon	HRS	18.9	114
ND	Williston	58801	Butte-86	HRS	19.5	105
ND	Williston	58801	Field	HRS	18.9	89
ND	Williston	58801	Grandin	HRS	19.2	103
ND	Williston	58801	Gus	HRS	20.1	107
ND	Williston	58801	Len	HRS	19.9	95
ND	Williston	58801	Marshall	HRS	18.9	101
ND	Williston	58801	Minnpro	HRS	21.1	101
ND	Williston	58801	ND-650	HRS	20.2	113
ND	Williston	58801	ND-652	HRS	19.3	100
ND	Williston	58801	ND-653	HRS	18.5	90
ND	Williston	58801	ND-654	HRS	18.6	96
ND	Williston	58801	Pioneer-2385	HRS	19.0	94
ND	Williston	58801	Stoa	HRS	18.9	99
ND	Williston	58801	Vance	HRS	19.6	90
NE	Alliance	69301	Arapahoe	HRW	15.0	92
NE	Alliance	69301	Brule	HRW	10.8	76
NE	Alliance	69301	Centurk-78	HRW	11.3	76
NE	Alliance	69301	Cody	HRW	14.5	91
NE	Alliance	69301	Colt	HRW	11.9	76
NE	Alliance	69301	Redland	HRW	12.9	77
NE	Alliance	69301	Siouxland	HRW	11.8	88
NE	Alliance	69301	Tam-107	HRW	13.5	95
NE	Alliance	69301	Tam-200	HRW	13.5	69
NE	Alliance	69301	Vona	HRW	11.8	55
NE	Clay-Center	68933	Arapahoe	HRW	13.8	73
NE	Clay-Center	68933	Brule	HRW	13.1	59
NE	Clay-Center	68933	Centurk-78	HRW	13.1	55
NE	Clay-Center	68933	Cody	HRW	13.6	67
NE	Clay-Center	68933	Colt	HRW	14.7	46
NE	Clay-Center	68933	Redland	HRW	13.0	55
NE	Clay-Center	68933	Siouxland	HRW	13.9	59
NE	Clay-Center	68933	Tam-107	HRW	13.3	71
NE	Clay-Center	68933	Tam-200	HRW	14.1	55
NE	Clay-Center	68933	Vona	HRW	15.0	49
NE	Geneva	68361	Abilene	HRW	13.2	71
NE	Geneva	68361	Agseco-7846	HRW	12.7	68
NE	Geneva	68361	Arapahoe	HRW	12.6	72
NE	Geneva	68361	Arkan	HRW	16.3	80
NE	Geneva	68361	Bounty-205	HRW	12.9	52

TABLE 2. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY LOC.

STATE	REGION	ZIPCODE	VARIETY	CLASS	PRO.	HRD.
NE	Geneva	68361	Bronco	HRW	12.6	72
NE	Geneva	68361	Century	HRW	13.4	75
NE	Geneva	68361	Chisholm	HRW	15.2	53
NE	Geneva	68361	Dodge	HRW	16.6	80
NE	Geneva	68361	Hawk	HRW	12.5	67
NE	Geneva	68361	Karl	HRW	17.3	83
NE	Geneva	68361	Mesa	HRW	15.1	81
NE	Geneva	68361	Mustang	HRW	14.2	70
NE	Geneva	68361	Newton	HRW	12.5	60
NE	Geneva	68361	Norkan	HRW	13.4	76
NE	Geneva	68361	Pioneer-2154	HRW	13.3	85
NE	Geneva	68361	Pioneer-2157	HRW	13.5	61
NE	Geneva	68361	Pioneer-2172	HRW	14.1	79
NE	Geneva	68361	Pioneer-2180	HRW	16.5	97
NE	Geneva	68361	Quantum-567	HRW	11.6	59
NE	Geneva	68361	Quantum-578	HRW	14.1	69
NE	Geneva	68361	Redland	HRW	11.2	64
NE	Geneva	68361	Rio-Blanco	HWW	14.1	78
NE	Geneva	68361	Sierra	HRW	12.8	68
NE	Geneva	68361	Siouxland	HRW	13.2	73
NE	Geneva	68361	Stallion	HRW	14.8	82
NE	Geneva	68361	Tam-101	HRW	15.2	64
NE	Geneva	68361	Tam-105	HRW	11.5	70
NE	Geneva	68361	Tam-107	HRW	12.1	82
NE	Geneva	68361	Tam-108	HRW	10.9	44
NE	Geneva	68361	Tam-200	HRW	12.6	77
NE	Geneva	68361	Thunderbird	HRW	14.0	77
NE	Geneva	68361	Trailblazer	HRW	13.4	75
NE	Geneva	68361	Victory	HRW	13.2	69
NE	Geneva	68361	Waco	HRW	16.1	83
NE	Mead	68041	Arapahoe	HRW	15.4	75
NE	Mead	68041	Brule	HRW	14.4	61
NE	Mead	68041	Centurk-78	HRW	14.3	78
NE	Mead	68041	Cody	HRW	14.8	83
NE	Mead	68041	Colt	HRW	16.9	56
NE	Mead	68041	Redland	HRW	13.8	67
NE	Mead	68041	Siouxland	HRW	15.0	71
NE	Mead	68041	Tam-107	HRW	15.5	79
NE	Mead	68041	Tam-200	HRW	15.5	57
NE	Mead	68041	Vona	HRW	15.7	43
NE	North-Platte	69101	Arapahoe	HRW	16.1	79
NE	North-Platte	69101	Brule	HRW	14.2	63
NE	North-Platte	69101	Centurk-78	HRW	15.1	73
NE	North-Platte	69101	Cody	HRW	15.5	74
NE	North-Platte	69101	Colt	HRW	15.7	59
NE	North-Platte	69101	Redland	HRW	14.1	62
NE	North-Platte	69101	Siouxland	HRW	15.3	71
NE	North-Platte	69101	Tam-107	HRW	14.8	81
NE	North-Platte	69101	Tam-200	HRW	15.2	55
NE	North-Platte	69101	Vona	HRW	16.4	53
NE	Sidney	69162	Arapahoe	HRW	11.4	66

TABLE 2. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY LOC.

STATE	REGION	ZIPCODE	VARIETY	CLASS	PRO.	HRD.
NE	Sidney	69162	Brule	HRW	10.7	66
NE	Sidney	69162	Centurk-78	HRW	12.1	58
NE	Sidney	69162	Cody	HRW	12.0	69
NE	Sidney	69162	Colt	HRW	13.2	53
NE	Sidney	69162	Redland	HRW	10.2	68
NE	Sidney	69162	Siouxland	HRW	13.4	68
NE	Sidney	69162	Tam-107	HRW	12.4	83
NE	Sidney	69162	Tam-200	HRW	11.5	53
NE	Sidney	69162	Vona	HRW	14.1	55
OK	Altus	73521	Chisholm	HRW	13.7	46
OK	Altus	73521	Karl	HRW	16.5	68
OK	Altus	73521	OK84286	HRW	15.1	71
OK	Altus	73521	OK84287	HRW	15.0	73
OK	Altus	73521	OK86215	HRW	14.8	56
OK	Altus	73521	OK86223	HRW	15.0	55
OK	Altus	73521	OK87542	HRW	15.1	53
OK	Altus	73521	OK87575	HRW	14.5	52
OK	Altus	73521	OK87630	HRW	13.9	50
OK	Altus	73521	OK87W663	HRW	14.2	46
OK	Altus	73521	Siouxland	HRW	14.7	73
OK	Altus	73521	Tam-200	HRW	14.9	62
OK	Goodwell	73939	Chisholm-Irrigated	HRW	14.8	43
OK	Goodwell	73939	Karl-Irrigated	HRW	16.1	68
OK	Goodwell	73939	OK84286-Irrigated	HRW	14.4	62
OK	Goodwell	73939	OK84287-Irrigated	HRW	14.3	64
OK	Goodwell	73939	OK86215-Irrigated	HRW	15.3	61
OK	Goodwell	73939	OK86223-Irrigated	HRW	14.4	55
OK	Goodwell	73939	OK87542-Irrigated	HRW	14.3	51
OK	Goodwell	73939	OK87575-Irrigated	HRW	14.1	62
OK	Goodwell	73939	OK87630-Irrigated	HRW	15.6	51
OK	Goodwell	73939	OK87W663-Irrigated	HRW	14.2	48
OK	Goodwell	73939	Siouxland-Irrigated	HRW	14.2	71
OK	Goodwell	73939	Tam-200-Irrigated	HRW	12.8	58
OK	Lahoma	73754	Chisholm	HRW	12.9	42
OK	Lahoma	73754	Karl	HRW	14.5	54
OK	Lahoma	73754	OK84286	HRW	13.1	60
OK	Lahoma	73754	OK84287	HRW	13.5	57
OK	Lahoma	73754	OK86215	HRW	13.8	44
OK	Lahoma	73754	OK86223	HRW	13.4	44
OK	Lahoma	73754	OK87542	HRW	13.3	42
OK	Lahoma	73754	OK87575	HRW	13.2	50
OK	Lahoma	73754	OK87630	HRW	13.5	41
OK	Lahoma	73754	OK87W663	HRW	13.2	43
OK	Lahoma	73754	Siouxland	HRW	13.9	60
OK	Lahoma	73754	Tam-200	HRW	13.3	61
OK	Nardin	74646	Abilene	HRW	13.0	73
OK	Nardin	74646	Agseco-7846	HRW	11.5	56
OK	Nardin	74646	Arapahoe	HRW	13.1	75
OK	Nardin	74646	Arkan	HRW	12.5	63
OK	Nardin	74646	Bounty-205	HRW	12.9	50
OK	Nardin	74646	Century	HRW	12.0	61



TABLE 2. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY LOC.

STATE	REGION	ZIPCODE	VARIETY	CLASS	PRO.	HRD.
OK	Nardin	74646	Chisholm	HRW	11.6	45
OK	Nardin	74646	Dodge	HRW	13.8	69
OK	Nardin	74646	Hawk	HRW	12.1	66
OK	Nardin	74646	Karl	HRW	13.6	62
OK	Nardin	74646	Mesa	HRW	12.0	78
OK	Nardin	74646	Mustang	HRW	12.2	64
OK	Nardin	74646	Newton	HRW	12.1	69
OK	Nardin	74646	Norkan	HRW	13.2	64
OK	Nardin	74646	Pioneer-2154	HRW	12.7	88
OK	Nardin	74646	Pioneer-2157	HRW	13.2	69
OK	Nardin	74646	Pioneer-2172	HRW	11.7	68
OK	Nardin	74646	Pioneer-2180	HRW	12.5	87
OK	Nardin	74646	Quantum-562	HRW	12.8	67
OK	Nardin	74646	Quantum-578	HRW	12.7	64
OK	Nardin	74646	Redland	HRW	11.7	69
OK	Nardin	74646	Rio-Blanco	HWW	12.2	61
OK	Nardin	74646	Siouxland	HRW	12.5	73
OK	Nardin	74646	Stallion	HRW	12.5	68
OK	Nardin	74646	Tam-101	HRW	13.0	57
OK	Nardin	74646	Tam-105	HRW	12.1	68
OK	Nardin	74646	Tam-107	HRW	11.7	68
OK	Nardin	74646	Tam-108	HRW	12.0	54
OK	Nardin	74646	Tam-200	HRW	12.3	75
OK	Nardin	74646	Thunderbird	HRW	13.5	82
OK	Nardin	74646	Trailblazer	HRW	12.8	78
OK	Nardin	74646	Victory	HRW	12.8	72
OK	Nardin	74646	W83-256	HRW	12.1	54
OK	Nardin	74646	W84-279	HRW	12.8	75
OK	Nardin	74646	Waco	HRW	13.5	70
OK	Stillwater	74074	Chisholm	HRW	13.6	50
OK	Stillwater	74074	Karl	HRW	16.0	63
OK	Stillwater	74074	OK84286	HRW	14.5	61
OK	Stillwater	74074	OK84287	HRW	14.3	66
OK	Stillwater	74074	OK86215	HRW	14.9	62
OK	Stillwater	74074	OK86223	HRW	14.6	49
OK	Stillwater	74074	OK87542	HRW	14.0	53
OK	Stillwater	74074	OK87575	HRW	14.5	59
OK	Stillwater	74074	OK87630	HRW	13.6	50
OK	Stillwater	74074	OK87W663	HRW	14.4	49
OK	Stillwater	74074	Siouxland	HRW	14.8	56
OK	Stillwater	74074	Tam-200	HRW	14.4	56
OK	Woodward	73801	Chisholm	HRW	12.9	38
OK	Woodward	73801	Karl	HRW	14.4	47
OK	Woodward	73801	OK84284	HRW	14.0	52
OK	Woodward	73801	OK84286	HRW	13.5	59
OK	Woodward	73801	OK86215	HRW	14.2	56
OK	Woodward	73801	OK86223	HRW	13.4	45
OK	Woodward	73801	OK87542	HRW	12.7	43
OK	Woodward	73801	OK87575	HRW	12.3	57
OK	Woodward	73801	OK87630	HRW	12.8	39
OK	Woodward	73801	OK87W663	HRW	12.0	53

TABLE 2. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY LOC.

STATE	REGION	ZIPCODE	VARIETY	CLASS	PRO.	HRD.
OK	Woodward	73801	Siouxland	HRW	12.7	58
OK	Woodward	73801	Tam-200	HRW	12.6	55
OR	Corvallis	97330	Batum	HRW	10.2	65
OR	Corvallis	97330	Hill	SWW	9.9	27
OR	Corvallis	97330	Madsen	SWW	10.4	29
OR	Corvallis	97330	Malcolm	SWW	9.2	26
OR	Corvallis	97330	OR83801	SWW	11.6	34
OR	Corvallis	97330	ORCR8313	HRW	11.4	77
OR	Corvallis	97330	ORCR8602	HRW	10.9	83
OR	Corvallis	97330	OSU-21	SWW	9.5	25
OR	Corvallis	97330	Stephens	SWW	9.7	36
OR	Corvallis	97330	Tres	Club	9.9	31
OR	Madras	97741	FCT'S'	HRS	12.3	80
OR	Madras	97741	McKay	HRS	15.8	77
OR	Madras	97741	Westbred-906R	HRS	15.0	87
OR	Moro	97039	Madsen	SWW	11.8	33
OR	Moro	97039	Malcolm	SWW	11.7	26
OR	Moro	97039	OR83801	SWW	11.3	24
OR	Moro	97039	ORCR8313	HRW	10.2	75
OR	Moro	97039	ORCR8602	HRW	11.0	85
OR	Moro	97039	OSU-21	SWW	10.5	40
OR	Moro	97039	Stephens	SWW	11.2	40
OR	Moro	97039	Tres	Club	11.6	32
OR	Pendleton	97801	Batum	HRW	11.4	94
OR	Pendleton	97801	FCT'S'	HRS	13.1	78
OR	Pendleton	97801	Hill	SWW	8.9	37
OR	Pendleton	97801	Madsen	SWW	8.2	32
OR	Pendleton	97801	Malcolm	SWW	8.8	38
OR	Pendleton	97801	McKay	HRS	14.1	90
OR	Pendleton	97801	OR83801	SWW	11.2	36
OR	Pendleton	97801	ORCR8313	HRW	12.3	74
OR	Pendleton	97801	ORCR8602	HRW	11.2	96
OR	Pendleton	97801	OSU-21	SWW	10.0	52
OR	Pendleton	97801	Stephens	SWW	9.0	29
OR	Pendleton	97801	Tres	Club	8.2	24
OR	Pendleton	97801	Westbred-906R	HRS	15.8	75
OR	Wasco-Co	97063	Batum	HRW	11.6	62
OR	Wasco-Co	97063	Hill	SWW	9.8	29
OR	Wasco-Co	97063	Madsen	SWW	9.8	31
OR	Wasco-Co	97063	Malcolm	SWW	9.5	24
OR	Wasco-Co	97063	OR83801	SWW	10.0	16
OR	Wasco-Co	97063	ORCR8313	HRW	10.4	70
OR	Wasco-Co	97063	ORCR8602	HRW	10.1	75
OR	Wasco-Co	97063	Stephens	SWW	11.1	21
OR	Wasco-Co	97063	Tres	Club	8.8	33
SD	Frankfort	57440	Butte-86	HRS	13.9	100
SD	Frankfort	57440	Len	HRS	15.0	92
SD	Frankfort	57440	Marshall	HRS	12.7	89
SD	Frankfort	57440	Pioneer-2369	HRS	13.0	103
SD	Frankfort	57440	Pioneer-2370	HRS	13.1	94
SD	Frankfort	57440	Pioneer-2375	HRS	11.6	87

**TABLE 2. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY LOC.**

STATE	REGION	ZIPCODE	VARIETY	CLASS	PRO.	HRD.
SD	Frankfort	57440	Pioneer-2385	HRS	14.6	93
SD	Frankfort	57440	Stoa	HRS	12.9	91
WA	Coulee-City	99115	Daws	SWW	12.4	30
WA	Coulee-City	99115	Dusty	SWW	11.4	19
WA	Coulee-City	99115	Hill-81	SWW	13.6	22
WA	Coulee-City	99115	Hyak	SWW	11.6	34
WA	Coulee-City	99115	Lewjain	SWW	12.4	20
WA	Coulee-City	99115	Madsen	SWW	12.0	34
WA	Coulee-City	99115	Malcolm	SWW	10.9	32
WA	Coulee-City	99115	Nugaines	SWW	12.4	25
WA	Coulee-City	99115	Stephens	SWW	12.4	23
WA	Coulee-City	99115	Tres	Club	12.4	24
WA	Coulee-City	99115	VC084077		13.2	14
WA	Coulee-City	99115	WA7431		12.8	19
WA	Coulee-City	99115	WA7529		11.2	18
WA	Coulee-City	99115	WA7627		13.4	24
WA	Pomeroy	99347	Daws	SWW	9.7	31
WA	Pomeroy	99347	Dusty	SWW	8.3	27
WA	Pomeroy	99347	Hill-81	SWW	8.4	24
WA	Pomeroy	99347	Hyak	SWW	9.8	35
WA	Pomeroy	99347	Lewjain	SWW	8.4	28
WA	Pomeroy	99347	Madsen	SWW	8.8	31
WA	Pomeroy	99347	Malcolm	SWW	9.4	29
WA	Pomeroy	99347	Nugaines	SWW	8.8	30
WA	Pomeroy	99347	Stephens	SWW	8.8	22
WA	Pomeroy	99347	Tres	Club	7.9	21
WA	Pomeroy	99347	VC084077		10.7	22
WA	Pomeroy	99347	WA7431		8.4	24
WA	Pomeroy	99347	WA7529		8.4	26
WA	Pomeroy	99347	WA7627		10.5	36
WA	Pullman	99163	Daws	SWW	10.4	37
WA	Pullman	99163	Dusty	SWW	10.0	20
WA	Pullman	99163	Hill-81	SWW	10.5	33
WA	Pullman	99163	Huntsman		11.1	29
WA	Pullman	99163	Hyak	SWW	10.0	41
WA	Pullman	99163	Lewjain	SWW	11.0	31
WA	Pullman	99163	Luke-WA7529	Mix	10.4	26
WA	Pullman	99163	Madsen	SWW	11.2	26
WA	Pullman	99163	Malcolm	SWW	11.3	35
WA	Pullman	99163	Nugaines	SWW	10.9	25
WA	Pullman	99163	Stephens	SWW	11.3	36
WA	Pullman	99163	Tres	Club	11.0	39
WA	Pullman	99163	VC084077		10.4	18
WA	Pullman	99163	WA7431		10.4	29
WA	Walla-Walla	99362	Daws	SWW	11.5	30
WA	Walla-Walla	99362	Dusty	SWW	11.5	24
WA	Walla-Walla	99362	Hill-81	SWW	12.2	35
WA	Walla-Walla	99362	Hyak	SWW	12.2	40
WA	Walla-Walla	99362	Lewjain	SWW	12.2	30
WA	Walla-Walla	99362	Madsen	SWW	13.0	41
WA	Walla-Walla	99362	Malcolm	SWW	11.6	36



TABLE 2. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY LOC.

STATE REGION		ZIPCODE	VARIETY	CLASS	PRO.	HRD.
WA	Walla-Walla	99362	Nugaines	SWW	11.3	31
WA	Walla-Walla	99362	Stephens	SWW	11.1	33
WA	Walla-Walla	99362	Tres	Club	11.5	33
WA	Walla-Walla	99362	VC084077		11.8	31
WA	Walla-Walla	99362	WA7431		11.2	31
WA	Walla-Walla	99362	WA7529		11.9	31
WA	Walla-Walla	99362	WA7627		12.3	37

TABLE 3. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY VAR.

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
Abilene	HRW	Edison	NE	68936	12.5	59
Abilene	HRW	Burlingame	KS	66413	13.9	62
Abilene	HRW	Satanta	KS	67870	13.8	63
Abilene	HRW	Hiawatha	KS	66434	13.6	73
Abilene	HRW	Hay-Springs	NE	69347	15.9	77
Abilene	HRW	Reserve	KS	66529	14.2	77
Abilene	HRW	White-Cloud	KS	66094	12.2	78
Abilene	HRW	White-Cloud	KS	66094	12.9	80
Abilene-Shawnee	Mix	Topeka	KS	66618	13.0	77
Agassiz	HRW	Bainville	MT	59212	11.4	71
Alex	HRS	Beulah	ND	58523	13.8	98
Alex	HRS	Beulah	ND	58523	15.0	107
Anza	HRW	Stockton	CA	95201	11.3	58
Anza	HRW	Stockton	CA	95208	12.7	73
Anza	HRW	Stockton	CA	95208	12.9	75
Anza	HRW	Dos-Palos	CA	93620	16.2	80
Anza	HRW	Williams	CA	95987	12.3	80
Anza	HRW	Woodland	CA	95695	11.4	82
Anza	HRW	Stockton	CA	95201	10.8	85
Anza-Hi	HRW	Stockton	CA	95208	11.2	84
Arapahoe	HRW	Hay-Springs	NE	69347	15.6	65
Arapahoe	HRW	Grant	NE	69140	12.8	67
Arkan	HRW	Erie	KS	66733	12.1	41
Arkan	HRW	Attica	KS	67009	12.6	41
Arkan	HRW	Attica	KS	67009	12.6	42
Arkan	HRW	Erie	KS	66733	13.0	45
Arkan	HRW	Burden	KS	67019	11.8	46
Arkan	HRW	Winfield	KS	67156	13.8	49
Arkan	HRW	Winfield	KS	67156	14.4	50
Arkan	HRW	Atlanta	KS	67008	13.1	51
Arkan	HRW	Burlingame	KS	66413	15.5	55
Arkan	HRW	Atlanta	KS	67008	14.5	55
Arkan	HRW	Clay-Center	KS	67432	16.0	60
Arkan	HRW	Delia	KS	66418	12.7	62
Arkan	HRW	Pauline	KS	66619	14.9	62
Arkan	HRW	Harveyville	KS	66431	15.7	67
Arkan	HRW	Clay-Center	KS	67432	15.4	68
Arkan	HRW	Reserve	KS	66529	14.5	74
Arkan	HRW	Hiawatha	KS	66434	14.3	78
Augusta	SWW	Ceresco	MI	49033	9.4	16
Augusta	SWW	Gilford	MI	48736	10.5	19
Augusta	SWW	Gilford	MI	48736	10.2	22
Augusta	SWW	St-Louis	MI	48880	10.7	23
Augusta	SWW	Elwell	MI	48832	10.3	23
Augusta	SWW	Battle-Creek	MI	49017	10.1	24
Augusta	SWW	Battle-Creek	MI	49017	11.1	25
Augusta	SWW	Portland	MI	48875	11.1	25
Augusta	SWW	Gilford	MI	48736	10.5	25
Augusta	SWW	Battle-Creek	MI	49017	10.9	25
Augusta	SWW	Gilford	MI	48736	9.8	27
Augusta	SWW	Sunfield	MI	48890	11.5	29

TABLE 3. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY VAR.

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
Augusta	SWW	Charlotte	MI	48813	11.6	30
Augusta	SWW	Gilford	MI	48736	11.6	30
Augusta	SWW	Gilford	MI	48736	10.4	31
Augusta	SWW	Gilford	MI	48736	11.5	33
Augusta	SWW	Gilford	MI	48736	10.7	34
Augusta	SWW	Gilford	MI	48736	11.4	39
Barbee	Club	Bickleton	WA	99322	10.5	25
Basin-Fall	SWW	Tensed	ID	83870	10.5	6
Becker	SRW	Minster	OH	45865	9.7	6
Becker	SRW	West-Unity	OH	43570	9.5	8
Becker	SRW	Kingston	OH	45644	9.4	12
Becker	SRW	Milford-Center	OH	43045	10.5	13
Becker	SRW	Pleasant-Hill	OH	45359	10.3	15
Becker	SRW	Columbus-Grove	OH	45830	9.2	16
Becker	SRW	Dola	OH	45835	10.8	20
Becker	SRW	Mechanicsburg	OH	43044	9.7	23
Becker	SRW	Ottawa	OH	45875	11.1	29
Becker	SRW	Plain-City	OH	43064	10.4	31
Beordless		Hardtner	KS	67057	11.4	63
Bliss	SWW	Rexburg	ID	83440	10.9	25
Bliss-Dirkwin	Mix	Cheney	WA	99004	10.6	15
Brule	HRW	Hemingford	NE	69348	13.7	62
Brule	HRW	Chappell	NE	69129	12.6	63
Brule	HRW	Grant	NE	69140	14.6	70
Buckskin	HRW	Kimball	NE	69145	12.3	63
Buckskin	HRW	Hemingford	NE	69348	16.0	69
Butte	HRS	Aberdeen	SD	57401	14.7	93
Butte	HRS	Scranton	ND	58653	15.8	101
Butte	HRS	Williston	ND	58801	15.8	103
Butte	HRS	Fredonia	ND	58440	15.7	106
Butte-86	HRS	Grafton	ND	58237	15.3	81
Butte-86	HRS	Grafton	ND	58237	14.1	84
Butte-86	HRS	Beach	ND	58621	13.8	88
Butte-86	HRS	Glenham	SD	57631	16.3	89
Butte-86	HRS	Herman	MN	56248	16.2	89
Butte-86	HRS	Scranton	ND	58653	15.0	94
Butte-86	HRS	Herman	MN	56248	14.8	95
Butte-86	HRS	Florence	SD	57235	15.2	95
Butte-86	HRS	Wheaton	MN	56296	15.9	96
Butte-86	HRS	Park-River	ND	58770	15.6	96
Butte-86	HRS	Neche	ND	58265	14.5	97
Butte-86	HRS	Carrington	ND	58421	16.0	97
Butte-86	HRS	Renville	MN	56284	15.2	97
Butte-86	HRS	Bradley	SD	57217	14.7	97
Butte-86	HRS	Carpenter	SD	57322	15.1	98
Butte-86	HRS	Herman	MN	56248	17.2	98
Butte-86	HRS	Climax	MN	56523	15.9	100
Butte-86	HRS	Dumont	MN	56236	16.0	100
Butte-86	HRS	Harvey	ND	58341	15.9	101
Butte-86	HRS	Fredonia	ND	58440	16.8	102
Butte-86	HRS	Carrington	ND	58421	16.4	103



TABLE 3. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY VAR.

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
Butte-86	HRS	Dumont	MN	56236	16.9	104
Butte-86	HRS	Larimore	ND	58251	16.9	104
Butte-86	HRS	Comstock	MN	56525	17.4	106
Butte-86	HRS	Regan	ND	58477	18.2	110
Butte-86	HRS	Regan	ND	58477	18.6	120
Caldwell	SRW	Erie	KS	66733	11.0	10
Caldwell	SRW	Camden	MI	49232	10.4	12
Caldwell	SRW	Kingston	OH	45644	9.7	13
Caldwell	SRW	Erie	KS	66733	11.3	14
Caldwell	SRW	Parsons	KS	67357	11.3	14
Caldwell	SRW	Erie	KS	66733	9.6	15
Caldwell	SRW	Marshall	MO	65340	9.9	15
Caldwell	SRW	Montpelier	OH	43543	10.4	16
Caldwell	SRW	Golden-City	MO	64748	10.8	16
Caldwell	SRW	Montpelier	OH	43543	10.6	16
Caldwell	SRW	Camden	MI	49232	11.4	17
Caldwell	SRW	Jefferson-City	MO	65102	12.3	17
Caldwell	SRW	Trenton	MO	64683	10.2	18
Caldwell	SRW	Camden	MI	49232	11.8	18
Caldwell	SRW	Camden	MI	49232	10.2	18
Caldwell	SRW	Ludlow-Falls	OH	45359	11.1	22
Caldwell	SRW	Drayton-Plains	MI	44820	11.0	22
Caldwell	SRW	Lockwood	MO	65682	10.9	23
Caldwell	SRW	Minster	OH	45865	11.5	23
Caldwell	SRW	Milford-Center	OH	43045	9.7	23
Caldwell	SRW	Jefferson-City	MO	65102	12.1	23
Caldwell	SRW	Pleasant-Hill	OH	45359	10.3	24
Caldwell	SRW	Jefferson-City	MO	65102	12.3	24
Caldwell	SRW	Leipsic	OH	45856	11.5	25
Caldwell	SRW	Jefferson-City	MO	65102	11.5	25
Caldwell	SRW	Mechanicsburg	OH	43044	10.1	25
Caldwell	SRW	Jefferson-City	MO	65102	11.3	26
Caldwell	SRW	Marshall	MO	65340	10.4	26
Caldwell	SRW	Golden-City	MO	64748	9.8	26
Caldwell	SRW	Lockwood	MO	65682	11.2	27
Caldwell	SRW	Harrod	OH	45850	11.4	27
Caldwell	SRW	Ottawa	OH	45875	10.1	28
Caldwell	SRW	Jefferson-City	MO	65102	13.4	28
Caldwell	SRW	Golden-City	MO	64748	11.3	29
Caldwell	SRW	Lockwood	MO	65682	11.3	30
Caldwell	SRW	Bethany	MO	64424	12.4	30
Caldwell	SRW	Jefferson-City	MO	65102	12.7	30
Caldwell	SRW	Jefferson-City	MO	65102	14.1	31
Caldwell	SRW	Old-Monroe	MO	63369	11.9	33
Caldwell/Cardinal	Mix	Mt-Vernon	OH	43050	11.3	18
Cardinal	SRW	Montpelier	OH	43543	10.0	12
Cardinal	SRW	Pioneer	OH	43554	10.2	16
Cardinal	SRW	Sweet-Springs	MO	65351	10.0	16
Cardinal	SRW	Marshall	MO	65340	11.0	18
Cardinal	SRW	Pleasant-Hill	OH	45359	9.8	19
Cardinal	SRW	Petersburg	OH	44454	11.1	20

TABLE 3. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY VAR.

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
Cardinal	SRW	Columbiana	OH	44408	10.5	22
Cardinal	SRW	Glandorf	OH	45848	10.1	22
Cardinal	SRW	Butler	PA	16001	11.5	23
Cardinal	SRW	Minster	OH	45865	10.1	25
Cardinal	SRW	St-Louis	MO	43140	10.5	26
Cardinal	SRW	Minster	OH	45865	10.0	26
Cardinal	SRW	Coulee-City	WA	99115	10.6	28
Cardinal	SRW	Pleasant-Hill	OH	45359	10.4	30
Cardinal	SRW	Marshall	MO	65340	11.2	34
Cargill-Bounty	Mix	O'Fallon	MO	63366	11.3	62
Cashup	SWW	Palouse	WA	99161	10.7	19
Cashup	SWW	Pomeroy	WA	99347	11.0	21
Cashup	SWW	Colfax	WA	99111	11.3	22
Centura	HRW	Venango	NE	69168	14.1	68
Centura	HRW	Venango	NE	69168	12.9	71
Centura	HRW	Kimball	NE	69145	13.3	75
Centura	HRW	Hemingford	NE	69348	15.5	83
Centurk	HRW	Grant	NE	69140	11.4	69
Century	HRW	Winfield	KS	67156	12.3	53
Cert-Marshall	Mix	Madison	MN	56256	15.3	91
Chilsolm	HRW	Tonkawa	OK	74653	12.3	43
Chisholm	HRW	Woodward	OK	73802	11.9	30
Chisholm	HRW	Medford	OK	73759	11.4	36
Chisholm	HRW	Afton	OK	74331	11.2	38
Chisholm	HRW	Woodward	OK	73802	13.9	40
Chisholm	HRW	Medford	OK	73759	13.2	41
Chisholm	HRW	Woodward	OK	73802	10.3	41
Chisholm	HRW	Kingfisher	OK	73750	12.2	41
Chisholm	HRW	Chickasha	OK	73018	10.6	41
Chisholm	HRW	Bison	OK	73720	10.4	42
Chisholm	HRW	Chickasha	OK	73018	10.8	42
Chisholm	HRW	Chickasha	OK	73018	11.6	44
Chisholm	HRW	Chickasha	OK	73018	10.8	44
Chisholm	HRW	Medford	OK	73759	10.8	44
Chisholm	HRW	Chickasha	OK	73018	11.3	45
Chisholm	HRW	Weatherford	OK	73096	12.5	46
Chisholm	HRW	Weatherford	OK	73096	11.2	47
Chisholm	HRW	Woodward	OK	73802	13.9	47
Chisholm	HRW	Bison	OK	73720	9.9	48
Chisholm	HRW	Weatherford	OK	73096	10.8	48
Chisholm	HRW	Hardtner	KS	67057	13.4	48
Chisholm	HRW	Bison	OK	73720	11.5	49
Chisholm	HRW	Kingfisher	OK	73750	12.2	49
Chisholm	HRW	Frederick	OK	73542	14.2	49
Chisholm	HRW	Weatherford	OK	73096	12.5	49
Chisholm	HRW	Weatherford	OK	73096	12.7	50
Chisholm	HRW	Bison	OK	73720	12.0	50
Chisholm	HRW	Frederick	OK	73542	13.5	50
Chisholm	HRW	Tonkawa	OK	74653	11.4	50
Chisholm	HRW	Kingfisher	OK	73750	12.3	50
Chisholm	HRW	Tonkawa	OK	74653	12.0	51

TABLE 3. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY VAR.

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
Chisholm	HRW	Kingfisher	OK	73750	12.2	51
Chisholm	HRW	Afton	OK	74331	11.1	52
Chisholm	HRW	Frederick	OK	73542	11.6	52
Chisholm	HRW	Woodward	OK	73802	12.0	52
Chisholm	HRW	Kingfisher	OK	73750	12.2	53
Chisholm	HRW	Frederick	OK	73542	14.3	53
Chisholm	HRW	Bison	OK	73720	12.3	54
Chisholm	HRW	Afton	OK	74331	12.0	56
Chisholm	HRW	Frederick	OK	73542	11.9	59
Chisholm	HRW	Medford	OK	73759	13.3	65
Chisholm	HRW	Afton	OK	74331	10.8	68
Chisholm	HRW	Afton	OK	74331	12.3	73
Cody	HRW	Hay-Springs	NE	69347	15.9	70
Cody	HRW	McCook	NE	69001	14.8	70
Cody	HRW	Hemingford	NE	69348	15.9	74
Colt	HRW	McCook	NE	69001	13.6	50
Colt	HRW	Hemingford	NE	69348	14.3	52
Crew	Club	Grass-Valley	OR	97029	9.7	29
Crew-Tres	Mix	Hartline	WA	99135	11.3	28
Daws	SWW	Cheney	WA	99004	10.8	19
Daws	SWW	Coulee-City	WA	99115	9.6	23
Daws	SWW	Coulee-City	WA	99115	10.8	23
Daws	SWW	Prescott	WA	99348	12.5	24
Daws	SWW	Prescott	WA	99348	11.5	24
Daws	SWW	Prescott	WA	99348	11.3	24
Daws	SWW	Coulee-City	WA	99115	9.2	26
Daws	SWW	Walla-Walla	WA	99362	10.7	27
Daws	SWW	Grangeville	ID	83530	9.1	31
Daws	SWW	Saint-John	WA	99171	10.0	35
Daws	SWW	Prescott	WA	99348	12.4	35
Daws-Stephens	Mix	Dayton	WA	99328	11.5	13
Daws-Stephens	Mix	Prescott	WA	99348	12.0	26
Dusty	SWW	Grangeville	ID	83530	9.5	11
Dusty	SWW	Dayton	WA	99328	12.1	19
Dusty	SWW	Pomeroy	WA	99347	11.8	20
Dusty-Stephens	Mix	Grangeville	ID	83530	10.3	25
Dynasty	SRW	Mechanicsburg	OH	43044	9.6	10
Dynasty	SRW	Columbus-Grove	OH	45830	9.9	14
Dynasty	SRW	Glandorf	OH	45848	11.6	26
Dynasty	SRW	Glandorf	OH	45848	11.5	26
Dynasty	SRW	Columbus-Grove	OH	45830	10.9	29
Eagle	HRW	Colby	KS	67701	11.2	65
Eagle	HRW	Hays	KS	67601	13.6	78
Edwall	SWW	Saint-John	WA	99171	14.2	15
Edwall	SWW	Bickleton	WA	99322	9.0	16
Edwall	SWW	Worley	ID	83876	10.3	16
Edwall	SWW	Worley	ID	83876	10.4	19
Edwall	SWW	Hartline	WA	99135	13.5	19
Edwall	SWW	Sprague	WA	99032	14.3	19
Edwall	SWW	Worley	ID	83876	10.0	20
Edwall	SWW	Culdesac	ID	83524	9.9	26



TABLE 3. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY VAR.

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
Edwall	SWW	Pomeroy	WA	99347	12.0	26
Edwall	SWW	Pomeroy	WA	99347	11.6	26
Edwall	SWW	Fairfield	WA	99012	11.9	28
FS402/GR876	Mix	Mt-Vernon	OH	43050	11.1	16
Fielder	SWW	Dayton	WA	99328	12.7	22
Fieldwin	SWW	Dayton	WA	99328	13.7	22
Frankenmuth	SWW	Carson-City	MI	48811	9.3	18
Frankenmuth	SWW	Alma	MI	48801	10.9	19
Frankenmuth	SWW	Sunfield	MI	48890	11.0	20
Frankenmuth	SWW	Lyons	MI	48851	10.2	21
Frankenmuth	SWW	Sunfield	MI	48890	11.3	22
Frankenmuth	SWW	Grand-Ledge	MI	48837	11.1	23
Frankenmuth	SWW	Alma	MI	48801	10.5	24
Frankenmuth	SWW	Alma	MI	48801	10.3	25
Frankenmuth	SWW	Shepherd	MI	48883	10.7	25
Frankenmuth	SWW	Alma	MI	48801	10.5	25
Frankenmuth	SWW	Grand-Ledge	MI	48837	11.0	26
Frankenmuth	SWW	Eagle	MI	48822	11.7	26
Frankenmuth	SWW	Grand-Ledge	MI	48837	12.0	27
Frankenmuth	SWW	Alma	MI	48801	10.6	29
Frankenmuth	SWW	Grand-Ledge	MI	48837	12.0	29
Frankenmuth	SWW	Grand-Ledge	MI	48837	12.7	32
Frankenmuth	SWW	Gilford	MI	48736	10.3	32
Frankenmuth	SWW	Eagle	MI	48822	11.6	39
Guard	HRS	Watertown	SD	57201	13.1	52
Guard	HRS	Watertown	SD	57201	13.0	52
Guard	HRS	Watertown	SD	57201	12.5	58
Guard	HRS	Watertown	SD	57201	12.4	65
Guard	HRS	Watertown	SD	57201	12.7	71
Guard	HRS	Platt	SD	57369	15.1	78
Guard	HRS	Brookings	SD	57006	14.7	78
Guard	HRS	Platte	SD	57369	14.2	83
Guard	HRS	Madison	SD	57042	14.4	84
Hart	SRW	Minster	OH	45865	10.3	13
Hawk	HRW	Leoti	KS	67861	11.4	50
Hawk	HRW	Satanta	KS	67870	10.8	60
Hawk	HRW	Satanta	KS	67870	15.8	69
Hawk	HRW	Rapelie	MT	59067	13.4	70
Hawk	HRW	Edgar	MT	59026	15.0	72
Hawk	HRW	Kimball	NE	69145	14.1	76
Hawk	HRW	Colby	KS	67701	12.2	81
Hill	SWW	Craigmont	ID	83523	10.6	31
Hill	SWW	Genesee	ID	83832	11.4	32
Hill-81	SWW	Dayton	WA	99328	11.5	15
Hill-81	SWW	Cataldo	ID	83810	11.0	16
Hill-81	SWW	Pomeroy	WA	99347	10.3	17
Hill-81	SWW	Colfax	WA	99111	11.3	18
Hill-81	SWW	Dayton	WA	99328	11.3	19
Hill-81	SWW	Dayton	WA	99328	12.3	20
Hill-81	SWW	Pomeroy	WA	99347	10.9	22
Hill-81	SWW	Cheney	WA	99004	11.6	23

TABLE 3. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY VAR.

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
Hill-81	SWW	Benton-City	WA	99320	11.8	23
Hill-81	SWW	Tensed	ID	83870	10.6	24
Hill-81	SWW	Pomeroy	WA	99347	11.8	24
Hill-81	SWW	Dayton	WA	99328	11.8	26
Hill-81	SWW	Amity	OR	97101	10.3	27
Hill-81	SWW	Nezperce	ID	83543	10.8	27
Hill-81	SWW	Rosalia	WA	99170	11.3	30
Hill-81	SWW	Worley	ID	83876	12.3	30
Hill-81	SWW	Grangeville	ID	83530	10.0	31
Hill-81	SWW	Wilsonville	OR	97020	10.8	33
Hill-81	SWW	Grangeville	ID	83530	9.8	35
Hill-81	SWW	Nezperce	ID	83543	10.5	35
Hill-81-Edward	Mix	Fairfield	WA	99012	11.5	13
Hillsdale	SRW	Kingston	OH	45644	10.2	18
Hillsdale	SRW	West-Unity	OH	43570	10.5	21
Horns-20		Crestline	OH	44827	10.1	23
Hyslop	SWW	Craigmont	ID	83523	9.7	19
Klasic	HWW	Stockton	CA	95207	13.0	51
Klasic	HWW	Merced	CA	95340	12.2	51
Klasic	HWW	Williams	CA	95987	12.3	68
Larned	HRW	Colby	KS	67701	13.1	53
Larned	HRW	Colby	KS	67701	12.1	67
Larned	HRW	Hays	KS	67601	9.8	69
Larned	HRW	Topeka	KS	67861	12.7	79
Larned	HRW	Topeka	KS	67861	9.6	80
Larned	HRW	Natoma	KS	67651	15.4	81
Larned	HRW	Zurick	KS	67676	12.3	81
Larned	HRW	Plainville	KS	67663	15.4	81
Larned	HRW	Plainville	KS	67663	13.8	94
Leaded		Drayton-Plains	MI	44820	10.8	23
Len	HRS	Scranton	ND	58653	15.9	88
Len	HRS	Rothsay	MN	56579	16.1	89
Len	HRS	Beach	ND	58621	16.2	91
Len	HRS	Carrington	ND	58421	16.6	94
Len	HRS	Larimore	ND	58251	16.0	95
Len	HRS	Carrington	ND	58421	17.2	96
Len	HRS	Regan	ND	58477	16.5	96
Len	HRS	Scranton	ND	58653	16.0	96
Len	HRS	Scranton	ND	58653	15.7	97
Len	HRS	Regan	ND	58477	15.9	98
Len	HRS	Fredonia	ND	58440	16.9	103
Lewjain	SWW	Wilbur	WA	99185	12.5	14
Lewjain	SWW	Coulee-City	WA	99115	13.0	18
Lewjain	SWW	Bickleton	WA	99322	10.1	19
Lewjain	SWW	Wilbur	WA	99185	9.6	19
Lewjain	SWW	Ritzville	WA	99169	12.1	20
Lewjain	SWW	Wilbur	WA	99185	11.9	20
Lewjain	SWW	Almira	WA	99103	12.3	21
Lewjain	SWW	Nezperce	ID	83543	8.5	21
Lewjain	SWW	Pomeroy	WA	99347	11.4	21
Lewjain	SWW	Wilbur	WA	99185	10.0	22

TABLE 3. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY VAR.

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
Lewjain	SWW	Nezperce	ID	83543	12.2	23
Lewjain	SWW	Nezperce	ID	83543	8.8	23
Lewjain	SWW	Wilbur	WA	99185	10.2	23
Lewjain	SWW	Almira	WA	99103	11.6	24
Lewjain	SWW	Lenore	ID	83541	9.7	25
Lewjain	SWW	Coulee-City	WA	99115	10.4	25
Lewjain	SWW	Wilbur	WA	99185	10.0	26
Lewjain	SWW	Edwall	WA	99008	11.6	32
Lewjain	SWW	Coulee-City	WA	99115	10.3	37
Lewjain-Edwall	Mix	Sprague	WA	99032	12.4	22
Lewjain-Edwall	Mix	Granger	WA	98932	13.4	27
Madsen	SWW	Prescott	WA	99348	12.1	30
Marshall	HRS	Foxhome	MN	56543	13.7	71
Marshall	HRS	Argyle	MN	56713	15.6	73
Marshall	HRS	Larimore	ND	58251	14.2	75
Marshall	HRS	Larimore	ND	58251	14.5	76
Marshall	HRS	Neché	ND	58265	14.9	76
Marshall	HRS	Argyle	MN	56713	13.2	77
Marshall	HRS	Appleton	MN	56208	13.7	77
Marshall	HRS	Crookston	MN	56716	16.8	79
Marshall	HRS	Climax	MN	56523	13.5	80
Marshall	HRS	Neché	ND	58265	14.4	80
Marshall	HRS	Dumont	MN	56236	14.1	81
Marshall	HRS	Climax	MN	56523	13.9	82
Marshall	HRS	Renville	MN	56284	14.9	82
Marshall	HRS	Wheaton	MN	56296	14.6	83
Marshall	HRS	Herman	MN	56248	15.0	84
Marshall	HRS	Elbow-Lake	MN	56531	15.0	85
Marshall	HRS	Foxhome	MN	56543	15.4	85
Marshall	HRS	Harvey	ND	58341	17.3	86
Marshall	HRS	Wheaton	MN	56296	14.7	86
Marshall	HRS	Neché	ND	58265	13.8	88
Marshall	HRS	Herman	MN	56248	15.4	88
Marshall	HRS	Argyle	MN	56713	15.5	89
Marshall	HRS	Argyle	MN	56713	15.2	89
Marshall	HRS	Madison	MN	56256	16.4	89
Marshall	HRS	Climax	MN	56523	15.0	90
Marshall	HRS	Leeds	ND	58346	17.0	92
Marshall	HRS	Elbow-Lake	MN	56531	17.1	93
Marshall	HRS	Elbow-Lake	MN	56531	16.9	93
Marshall	HRS	Rothsay	MN	56579	17.1	93
Marshall	HRS	Comstock	MN	56525	16.8	100
Marshall	HRS	Herman	MN	56248	16.6	100
Marshall	HRS	Argyle	MN	56713	17.4	104
Marshall	HRS	Comstock	MN	56525	18.2	108
Marshall	HRS	Climax	MN	56523	18.2	111
Merchman-Kate		Galt	MO	64641	11.9	18
Mesa	HRW	Burden	KS	67019	10.6	44
Mesa	HRW	Burden	KS	67019	13.3	49
Mesa	HRW	Medford	OK	73759	13.3	56
Mesa	HRW	Afton	OK	74331	11.6	59



TABLE 3. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY VAR.

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
Mesa	HRW	Bison	OK	73720	10.2	62
Mesa	HRW	Medford	OK	73759	12.4	64
Mesa	HRW	Colby	KS	67701	13.1	69
Mesa	HRW	Woodward	OK	73802	16.1	78
Mesa	HRW	Woodward	OK	73802	16.8	82
Mesa	HRW	Frederick	OK	73542	14.7	83
Mesa	HRW	Frederick	OK	73542	14.7	84
Mesa	HRW	Frederick	OK	73542	14.6	91
Mesa	HRW	Frederick	OK	73542	14.7	93
Mesa-Cassidy	Mix	Frederick	OK	73542	14.6	94
Moro	Club	Kahlotus	WA	99335	11.3	22
Moro	Club	Ritzville	WA	99169	10.0	23
Moro	Club	Ritzville	WA	99169	10.2	23
Moro	Club	Ritzville	WA	99169	10.0	24
Mustang	HRW	Plains	KS	67869	13.6	75
Mustang	HRW	Hays	KS	67601	15.5	99
Neeley	HRW	Townsend	MT	59644	14.1	56
Neeley	HRW	Havre	MT	59501	11.8	62
Neeley	HRW	Laurel	MT	59044	11.8	66
Neeley	HRW	Havre	MT	59501	13.2	66
Neeley	HRW	Rapelie	MT	59067	10.9	70
Newton	HRW	Erie	KS	66733	9.9	32
Newton	HRW	Clay-Center	KS	67432	13.2	54
Newton	HRW	Leoti	KS	67861	11.9	55
Newton	HRW	Johnson	KS	67855	13.0	57
Newton	HRW	Johnson	KS	67855	13.5	59
Newton	HRW	Colby	KS	67701	13.3	59
Newton	HRW	Reserve	KS	66529	12.3	66
Newton	HRW	Hays	KS	67601	14.1	70
Newton	HRW	Hiawatha	KS	66434	14.5	72
Newton	HRW	Colby	KS	67701	12.5	73
Newton	HRW	Hays	KS	67601	16.0	74
Newton	HRW	Natoma	KS	67651	16.0	74
Newton	HRW	Colby	KS	67701	13.1	74
Newton	HRW	Hays	KS	67601	15.3	82
Newton	HRW	Zurick	KS	67676	14.4	83
Newton	HRW	Zurick	KS	67676	14.4	84
Newton	HRW	Hiawatha	KS	66434	13.3	84
Norkan	HRW	Hiawatha	KS	66434	12.9	65
Norseman	HRS	Appleton	MN	56208	14.9	86
Norstar	HRW	Havre	MT	59501	11.3	58
Norstar	HRW	Havre	MT	59501	14.5	70
Norwin	HRW	Havre	MT	59501	11.4	82
Norwin	HRW	Havre	MT	59501	11.4	85
Olso	HRS	Crookston	MN	56716	15.2	60
Owens	SWW	Tensed	ID	83870	10.7	15
Owens	SWW	Dayton	WA	99328	13.6	17
Owens	SWW	Dayton	WA	99328	13.3	18
Owens	SWW	Hartline	WA	99135	14.1	21
Owens	SWW	Colfax	WA	99111	12.3	23
Owens	SWW	Lacrosse	WA	99143	13.0	23

TABLE 3. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY VAR.

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
Owens-Tres	Mix	Ritzville	WA	99169	12.5	23
Penawawa	SWW	Bickleton	WA	99322	13.0	17
Penawawa	SWW	Fairfield	WA	99012	11.6	18
Penawawa	SWW	Rosalia	WA	99170	12.8	19
Penawawa	SWW	Rexburg	ID	83440	11.3	19
Penawawa-Lewjain	Mix	Fairfield	WA	99012	11.9	22
Pike	SRW	Lockwood	MO	65682	10.5	10
Pike	SRW	Trenton	MO	64683	11.3	14
Pioneer-2127		Stillwater	OK	74076	11.1	66
Pioneer-2127		Stillwater	OK	74076	13.0	68
Pioneer-2157	HRW	Chickasha	OK	73018	10.4	33
Pioneer-2157	HRW	Stillwater	OK	74076	11.0	38
Pioneer-2157	HRW	Stillwater	OK	74076	10.6	47
Pioneer-2157	HRW	Winfield	KS	67156	13.8	47
Pioneer-2157	HRW	Tonkawa	OK	74653	12.5	48
Pioneer-2157	HRW	Woodward	OK	73802	15.8	52
Pioneer-2157	HRW	Chickasha	OK	73018	10.7	52
Pioneer-2157	HRW	Bison	OK	73720	13.8	54
Pioneer-2157	HRW	Winfield	KS	67156	12.7	54
Pioneer-2157	HRW	Woodward	OK	73802	14.4	54
Pioneer-2157	HRW	Woodward	OK	73802	16.9	56
Pioneer-2157	HRW	Medford	OK	73759	13.2	58
Pioneer-2157	HRW	Hays	KS	67601	15.1	59
Pioneer-2157	HRW	Tonkawa	OK	74653	13.4	60
Pioneer-2157	HRW	Medford	OK	73759	13.7	61
Pioneer-2157	HRW	Kingfisher	OK	73750	12.6	61
Pioneer-2157	HRW	Chickasha	OK	73018	11.8	61
Pioneer-2157	HRW	Medford	OK	73759	14.6	61
Pioneer-2157	HRW	Tonkawa	OK	74653	11.3	61
Pioneer-2157	HRW	Tonkawa	OK	74653	11.6	61
Pioneer-2157	HRW	Kingfisher	OK	73750	13.8	61
Pioneer-2157	HRW	Medford	OK	73759	14.6	62
Pioneer-2157	HRW	Weatherford	OK	73096	12.8	62
Pioneer-2157	HRW	Chickasha	OK	73018	12.2	62
Pioneer-2157	HRW	Stillwater	OK	74076	12.0	62
Pioneer-2157	HRW	Bison	OK	73720	13.6	62
Pioneer-2157	HRW	Stillwater	OK	74076	12.3	63
Pioneer-2157	HRW	Weatherford	OK	73096	13.1	63
Pioneer-2157	HRW	Weatherford	OK	73096	12.8	63
Pioneer-2157	HRW	Tonkawa	OK	74653	13.2	64
Pioneer-2157	HRW	Weatherford	OK	73096	13.0	65
Pioneer-2157	HRW	Frederick	OK	73542	13.7	65
Pioneer-2157	HRW	Bison	OK	73720	11.1	66
Pioneer-2157	HRW	Medford	OK	73759	13.6	68
Pioneer-2157	HRW	Chickasha	OK	73018	12.3	68
Pioneer-2157	HRW	Afton	OK	74331	11.3	68
Pioneer-2157	HRW	Bison	OK	73720	13.1	69
Pioneer-2157	HRW	Weatherford	OK	73096	14.1	70
Pioneer-2157	HRW	Stillwater	OK	74076	12.8	70
Pioneer-2157	HRW	Afton	OK	74331	11.2	70
Pioneer-2157	HRW	Afton	OK	74331	12.1	71

TABLE 3. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY VAR.

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
Pioneer-2157	HRW	Afton	OK	74331	10.6	71
Pioneer-2157	HRW	Frederick	OK	73542	13.9	72
Pioneer-2157	HRW	Frederick	OK	73542	13.6	74
Pioneer-2157	HRW	Afton	OK	74331	11.6	75
Pioneer-2157	HRW	Frederick	OK	73542	13.7	75
Pioneer-2157	HRW	Frederick	OK	73542	13.5	78
Pioneer-2167	HRW	Stillwater	OK	74076	11.4	54
Pioneer-2167	HRW	Stillwater	OK	74076	11.2	59
Pioneer-2180	HRW	Medford	OK	73759	13.9	85
Pioneer-2180	HRW	Bison	OK	73720	12.0	96
Pioneer-2251		Jefferson-City	MO	65102	12.1	20
Pioneer-2305		Renville	MN	56284	17.4	96
Pioneer-2369	HRS	Climax	MN	56523	14.6	86
Pioneer-2369	HRS	Larimore	ND	58251	15.5	93
Pioneer-2550	SRW	Arcanum	OH	45304	10.3	14
Pioneer-2551	SRW	Marshall	MO	65340	11.2	7
Pioneer-2551	SRW	Houstonia	MO	65333	10.9	18
Pioneer-2551	SWW	Erie	KS	66733	13.4	22
Pioneer-2553	SRW	Golden-City	MO	64748	10.6	12
Pioneer-2555	SRW	Bethany	MO	64424	13.9	20
Pioneer-2555	SRW	Houstonia	MO	65333	9.9	23
Pioneer-2555	SRW	Marshall	MO	65340	13.3	31
Pioneer-906R	Mix	Foxhome	MN	56543	17.5	78
Plainsman	HRW	Winfield	KS	67156	14.9	58
Pony	HRW	Chickasha	OK	73018	10.4	41
Redland	HRW	Chappell	NE	69129	12.2	56
Redland	HRW	Hay-Springs	NE	69347	15.3	56
Redland	HRW	Grant	NE	69140	14.3	57
Redland	HRW	Hemingford	NE	69348	13.5	58
Redland	HRW	Chappell	NE	69129	11.7	62
Redland	HRW	Chappell	NE	69129	12.2	64
Redland	HRW	Venango	NE	69168	12.3	65
Redskin	HRW	Townsend	MT	59644	13.8	56
Redwin	HRW	Havre	MT	59501	14.4	75
Redwin	HRW	Havre	MT	59501	13.9	79
Scotty	SRW	Minster	OH	45865	9.9	12
Scout-66	HRW	Hemingford	NE	69348	14.2	73
Shawnee-Arkan	Mix	Topeka	KS	66618	11.6	45
Shawnee-Tam-107	Mix	Johnson	KS	67855	12.0	82
Shield	HRS	Rothsay	MN	56579	15.4	84
Siouxland	HRW	Kimball	NE	69145	12.1	62
Siouxland	HRW	McCook	NE	69001	14.4	64
Siouxland	HRW	Hemingford	NE	69348	14.4	67
Siouxland	HRW	Chappell	NE	69129	12.7	67
Siouxland	HRW	Burlingame	KS	66413	15.9	73
Sprague	SWW	Mansfield	WA	98830	10.9	20
Sprague	SWW	Waterville	WA	98858	11.1	21
Sprague	SWW	Waterville	WA	98858	10.9	22
Sprague	SWW	Waterville	WA	98858	11.8	22
Sprague	SWW	Mansfield	WA	98830	10.7	22
Sprague	SWW	Waterville	WA	98858	11.0	23



TABLE 3. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY VAR.

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
Sprague	SWW	Mansfield	WA	98830	10.9	24
Sprague	SWW	Waterville	WA	98858	11.7	24
Sprague	SWW	Waterville	WA	98858	11.9	28
Sprague-Daws	Mix	Coulee-City	WA	99115	10.2	22
Sprague-Daws	Mix	Coulee-City	WA	99115	10.3	24
Sprague-Daws	Mix	Hartline	WA	99135	10.4	24
Sprague-Daws	Mix	Coulee-City	WA	99115	10.1	25
Sprague-Johns	Mix	Waterville	WA	98858	10.9	16
Stallion	HRW	Winfield	KS	67156	11.9	52
Stallion	HRW	Kingfisher	OK	73750	13.8	56
Stallion	HRW	Kingfisher	OK	73750	13.5	56
Stallion	HRW	Tonkawa	OK	74653	14.4	57
Stallion	HRW	Kingfisher	OK	73750	12.4	60
Stallion	HRW	Kingfisher	OK	73750	12.3	63
Stallion	HRW	Tonkawa	OK	74653	11.8	64
Stallion	HRW	Kingfisher	OK	73750	14.8	65
Stallion	HRW	Kingfisher	OK	73750	12.5	68
Stallion	HRW	Tonkawa	OK	74653	12.0	71
Stallion	HRW	Tonkawa	OK	74653	12.8	76
Stallion	HRW	Bison	OK	73720	13.4	76
Stallion	HRW	Kingfisher	OK	73750	12.4	76
Stallion	HRW	Kingfisher	OK	73750	12.1	80
Stephens	SWW	Dayton	WA	99328	11.9	15
Stephens	SWW	Nezperce	ID	83543	10.5	18
Stephens	SWW	Nezperce	ID	83543	10.5	18
Stephens	SWW	Genesee	ID	83832	11.2	20
Stephens	SWW	Mountain-Home	ID	83647	11.4	21
Stephens	SWW	Ashland	MS	38603	11.3	21
Stephens	SWW	Nezperce	ID	83543	13.9	22
Stephens	SWW	Lenore	ID	83541	9.9	23
Stephens	SWW	Pomeroy	WA	99347	12.1	24
Stephens	SWW	Greencreek	ID	83533	9.5	24
Stephens	SWW	Dayton	WA	99328	11.4	24
Stephens	SWW	Mountain-Home	ID	83647	11.2	25
Stephens	SWW	Filer	ID	83328	11.8	25
Stephens	SWW	Genesee	ID	83832	11.2	25
Stephens	SWW	Power-Co	ID	83211	11.2	26
Stephens	SWW	Genesee	ID	83832	10.6	26
Stephens	SWW	Pomeroy	WA	99347	12.3	26
Stephens	SWW	Genesee	ID	83832	11.7	26
Stephens	SWW	Genesee	ID	83832	11.9	26
Stephens	SWW	Saint-John	WA	99171	10.8	26
Stephens	SWW	Craigmont	ID	83523	10.7	27
Stephens	SWW	Prescott	WA	99348	12.0	27
Stephens	SWW	Nezperce	ID	83543	10.9	27
Stephens	SWW	Meridian	ID	83642	10.4	27
Stephens	SWW	Pullman	WA	99163	11.6	28
Stephens	SWW	Genesee	ID	83832	11.4	28
Stephens	SWW	Nezperce	ID	83543	11.2	28
Stephens	SWW	Prescott	WA	99348	12.3	29
Stephens	SWW	Culdesac	ID	83524	10.9	29

TABLE 3. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY VAR.

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
Stephens	SWW	Genesee	ID	83832	11.2	29
Stephens	SWW	Genesee	ID	83832	11.2	29
Stephens	SWW	Genesee	ID	83832	11.2	30
Stephens	SWW	Askew	MS	38604	11.9	31
Stephens	SWW	Amity	OR	97101	10.6	31
Stephens	SWW	Donald	OR	97020	10.4	31
Stephens	SWW	Maupin	OR	97037	10.5	31
Stephens	SWW	Arkabutla	MS	38602	11.3	32
Stephens	SWW	Culdesac	ID	83524	10.8	32
Stephens	SWW	Craigmont	ID	83523	11.9	32
Stephens	SWW	Mountain-Home	ID	83647	10.9	32
Stephens	SWW	Amity	OR	97101	10.6	33
Stephens	SWW	Colfax	WA	99111	12.2	34
Stephens	SWW	Quincy	WA	98848	12.1	35
Stephens	SWW	Prescott	WA	99348	13.1	37
Stephens	SWW	Grass-Valley	OR	97029	10.1	37
Stephens	SWW	Craigmont	ID	83523	10.8	39
Stephens-Hill	Mix	Dayton	WA	99328	10.4	23
Stoa	HRS	Grafton	ND	58237	14.1	73
Stoa	HRS	Larimore	ND	58251	14.9	85
Stoa	HRS	Grafton	ND	58237	16.2	86
Stoa	HRS	Danvers	MN	56231	14.8	88
Stoa	HRS	Fredonia	ND	58440	14.0	89
Stoa	HRS	Harvey	ND	58341	18.0	89
Stoa	HRS	Neché	ND	58265	15.7	91
Stoa	HRS	Beach	ND	58621	15.4	94
Stoa	HRS	Carrington	ND	58421	14.7	97
Stoa	HRS	Harvey	ND	58341	17.8	97
Stoa	HRS	Carrington	ND	58421	15.1	98
Stoa	HRS	Kulm	ND	58456	13.7	98
Stoa	HRS	Fredonia	ND	58440	16.0	103
Stoa	HRS	Regan	ND	58477	16.0	104
Stoa	HRS	Beach	ND	58621	19.8	107
Stoa	HRS	Beulah	ND	58523	17.9	108
Stoa	HRS	Beulah	ND	58523	16.7	108
Stoa	HRS	Regan	ND	58477	19.9	110
Stokay	HRW	Los-Banos	CA	93635	12.9	86
TFS-7846		White-Cloud	KS	66094	12.4	62
Tadinia	HRS	Williams	CA	95987	12.3	80
Tam-101	HRW	Weatherford	OK	73096	13.1	52
Tam-101	HRW	Afton	OK	74331	9.8	53
Tam-101	HRW	Weatherford	OK	73096	14.2	55
Tam-101	HRW	Weatherford	OK	73096	14.1	56
Tam-101	HRW	Weatherford	OK	73096	14.0	57
Tam-101	HRW	Chickasha	OK	73018	12.9	64
Tam-101	HRW	Weatherford	OK	73096	14.5	64
Tam-101	HRW	Bison	OK	73720	13.9	66
Tam-101	HRW	Chickasha	OK	73018	12.6	71
Tam-105	HRW	Venango	NE	69168	12.4	69
Tam-107	HRW	Erie	KS	66733	10.3	55
Tam-107	HRW	Topeka	KS	67861	13.2	57

TABLE 3. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY VAR.

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
Tam-107	HRW	Venango	NE	69168	13.6	65
Tam-107	HRW	Venango	NE	69168	14.6	73
Tam-107	HRW	Grant	NE	69140	14.5	74
Tam-107	HRW	Colby	KS	67701	13.1	74
Tam-107	HRW	Venango	NE	69168	13.4	75
Tam-107	HRW	Chappell	NE	69129	12.8	79
Tam-107	HRW	Natoma	KS	67651	13.5	80
Tam-107	HRW	Trenton	MO	64683	12.3	81
Tam-107	HRW	Colby	KS	67701	12.8	83
Tam-107	HRW	Gilman-City	MO	64642	11.1	83
Tam-107	HRW	Trenton	MO	64683	13.8	86
Tam-107	HRW	Johnson	KS	67855	12.2	89
Tam-107	HRW	Hays	KS	67601	12.3	92
Tam-107	HRW	Gilman-City	MO	64642	13.3	93
Tam-107	HRW	Hays	KS	67601	14.0	94
Tam-107	HRW	Zurick	KS	67676	13.6	98
Tam-107	HRW	Hays	KS	67601	13.1	99
Tam-107	HRW	Topeka	KS	67861	12.4	102
Tam-108	HRW	Satanta	KS	67870	12.2	38
Tam-108	HRW	Gilman-City	MO	64642	10.2	40
Tam-108	HRW	Afton	OK	74331	11.8	46
Tam-108	HRW	Bison	OK	73720	13.3	58
Tam-108	HRW	Topeka	KS	66618	13.8	82
Tam-200	HRW	Grant	NE	69140	13.2	58
Telemark	HRS	Neché	ND	58265	15.2	87
Thunderbird	HRW	Ogallala	NE	69153	14.7	59
Thunderbird	HRW	Medford	OK	73759	13.6	61
Thunderbird	HRW	Kimball	NE	69145	14.7	61
Thunderbird	HRW	Osage-City	KS	66523	14.4	64
Thunderbird	HRW	Winfield	KS	67156	13.5	64
Thunderbird	HRW	Osage-City	KS	66523	15.6	68
Thunderbird	HRW	Grant	NE	69140	15.3	68
Thunderbird	HRW	Kimball	NE	69145	13.6	68
Thunderbird	HRW	Hay-Springs	NE	69347	15.9	70
Thunderbird	HRW	Clay-Center	KS	67432	16.8	71
Thunderbird	HRW	McCook	NE	69001	15.6	71
Thunderbird	HRW	Reserve	KS	66529	13.3	75
Thunderbird	HRW	Kimball	NE	69145	14.9	76
Thunderbird	HRW	Medford	OK	73759	13.6	85
Tiber	HRW	Townsend	MT	59644	16.8	55
Titan	SRW	Utica	OH	43080	11.2	16
Titan	SRW	Mechanicsburg	OH	43044	11.3	29
Titan	SRW	Minster	OH	45865	11.2	29
Trailblazer	HRW	Hardtner	KS	67057	13.5	67
Trailblazer	HRW	McCook	NE	69001	15.7	70
Tres	Club	Cheney	WA	99004	9.5	12
Tres	Club	Plummer	ID	83851	9.2	14
Tres	Club	Wilbur	WA	99185	10.7	14
Tres	Club	Wilbur	WA	99185	10.2	19
Tres	Club	Bickleton	WA	99322	9.1	21
Tres	Club	Almira	WA	99103	10.5	21



TABLE 3. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY VAR.

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
Tres	Club	Bickleton	WA	99322	10.7	23
Tres	Club	Wilbur	WA	99185	10.6	25
Tres	Club	Dayton	WA	99328	14.2	25
Tres	Club	Wilbur	WA	99185	11.4	25
Tres	Club	Wilbur	WA	99185	9.8	25
Tres	Club	Hartline	WA	99135	10.8	26
Tres	Club	Wilbur	WA	99185	11.2	26
Tres	Club	Pomeroy	WA	99347	10.6	26
Tres	Club	Wilbur	WA	99185	11.7	26
Tres	Club	Ritzville	WA	99169	10.5	26
Tres	Club	Prescott	WA	99348	12.8	28
Tres	Club	Walla-Walla	WA	99362	11.2	29
Tres	Club	Wilbur	WA	99185	13.1	29
Tres	Club	Wilbur	WA	99185	11.8	29
Tres	Club	Wilbur	WA	99185	10.0	29
Tres	Club	Wilson-Creek	WA	98860	11.7	30
Tres	Club	Grangeville	ID	83530	10.5	33
Tres	Club	Walla-Walla	WA	99362	11.9	35
Tres	Club	Grass-Valley	OR	97029	10.8	37
Tres-Crew	Mix	Hartline	WA	99135	11.1	25
Tres-Crew	Mix	Hartline	WA	99135	11.0	30
Tres-Crew	Mix	Hartline	WA	99135	11.3	33
Triumph	HRW	Stillwater	OK	74076	13.4	46
Triumph	HRW	Stillwater	OK	74076	14.0	52
Triumph	HRW	Stillwater	OK	74076	13.3	54
Triumph	HRW	Stillwater	OK	74076	12.6	55
Triumph	HRW	Chickasha	OK	73018	11.9	56
Triumph	HRW	Medford	OK	73759	13.4	67
Triumph	HRW	Stillwater	OK	74076	14.0	71
Triumph-64	HRW	Winfield	KS	67156	13.5	45
Tyler	SRW	Canfield	OH	44406	10.5	21
Tyler	SRW	North-Lima	OH	44452	10.5	22
Tyler	SRW	Leipsic	OH	45856	12.9	23
Tyler	SRW	Youngstown	OH	44514	10.2	24
Tyler	SRW	Salem	OH	44460	11.8	25
Tyler	SRW	Dunkirk	OH	45836	10.7	29
Vance	HRS	Holloway	MN	56249	17.4	87
Victory	HRW	Topeka	KS	66617	12.0	45
Victory	HRW	Burden	KS	67019	10.7	51
Victory	HRW	Burlingame	KS	66413	15.0	52
Victory	HRW	Winfield	KS	67156	12.9	54
Victory	HRW	McCook	NE	69001	14.3	57
Victory	HRW	Harveyville	KS	66431	13.0	58
Victory	HRW	Satanta	KS	67870	12.7	64
Victory	HRW	Osage-City	KS	66523	14.2	66
Victory	HRW	Hay-Springs	NE	69347	15.0	67
Victory	HRW	Kimball	NE	69145	14.8	67
Victory	HRW	Clay-Center	KS	67432	15.3	68
Victory	HRW	Grant	NE	69140	14.6	68
Victory	HRW	Clay-Center	KS	67432	15.8	70
Victory	HRW	Pauline	KS	66619	15.1	72

TABLE 3. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY VAR.

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
Victory	HRW	Burlingame	KS	66413	14.7	73
Victory	HRW	White-Cloud	KS	66094	13.7	74
Victory	HRW	Pauline	KS	66619	13.9	74
Victory	HRW	Reserve	KS	66529	14.5	75
Victory	HRW	Clay-Center	KS	67432	15.6	77
Victory	HRW	White-Cloud	KS	66094	12.4	77
Vona	HRW	Chickasha	OK	73018	12.1	54
Waldron	HRS	Beulah	ND	58523	13.9	92
Waldron	HRS	Beulah	ND	58523	14.0	94
Waverly	SWW	Ferdinand	ID	83526	10.0	30
Waverly	SWW	Kahlotus	WA	99335	14.8	32
Waverly-Hill-81	Mix	Worley	ID	83876	11.7	21
Weston	HRW	Billings	MT	59101	13.4	55
Weston	HRW	Edgar	MT	59026	14.8	59
Wheaton	HRS	Elbow-Lake	MN	56531	14.1	70
Wheaton	HRS	Renville	MN	56284	17.0	72
Wheaton	HRS	Appleton	MN	56208	14.0	73
Wheaton	HRS	Madison	MN	56256	15.0	76
Wheaton	HRS	Argyle	MN	56713	14.2	78
Wheaton	HRS	Elbow-Lake	MN	56531	13.7	79
Wheaton	HRS	Elbow-Lake	MN	56531	16.7	82
Wheaton	HRS	Madison	MN	56256	14.6	83
Wheaton	HRS	Danvers	MN	56231	14.5	86
Wheaton	HRS	Rothsay	MN	56579	15.6	91
Wheaton	HRS	Crookston	MN	56716	16.2	95
White-130		Sacramento	CA	95835	13.6	64
Winoka	HRW	Havre	MT	59501	12.5	74
Winoka	HRW	Havre	MT	59501	14.7	78
YR-Hi		Stockton	CA	95204	14.1	75
Yecora-Rojo	HRW	Bakersfield	CA	93389	15.5	70
Yecora-Rojo	HRW	Goshen	CA	93227	13.5	70
Yecora-Rojo	HRW	Goshen	CA	93227	12.2	70
Yecora-Rojo	HRW	McFarland	CA	93250	13.1	71
Yecora-Rojo	HRW	Bakersfield	CA	93311	12.1	72
Yecora-Rojo	HRW	Lemoore	CA	93245	14.2	80
Yecora-Rojo	HRW	Firebaugh	CA	93622	12.9	80
Yecora-Rojo	HRW	Corcoran	CA	93212	13.2	81
Yecora-Rojo	HRW	Corcoran	CA	93212	13.2	86
Yolo	HRW	Williams	CA	95987	10.2	67
Yolo	HRW	Stockton	CA	95208	9.6	75
Yolo	HRW	Stockton	CA	95208	9.9	76

**TABLE 4. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY VAR.**

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
Abilene	HRW	Reno-Co	KS	67501	14.8	50
Abilene	HRW	Labette	KS	67350	12.5	64
Abilene	HRW	Garden-City	KS	67846	13.6	66
Abilene	HRW	Republic-Co	KS	66935	15.8	68
Abilene	HRW	Franklin-Co	KS	66067	12.7	69
Abilene	HRW	Geneva	NE	68361	13.2	71
Abilene	HRW	Harvey-Co	KS	67114	16.8	71
Abilene	HRW	Brown-Co	KS	66434	13.8	73
Abilene	HRW	Nardin	OK	74646	13.0	73
Abilene	HRW	Ellis-Co	KS	67601	15.8	79
Abilene	HRW	Berthoud	CO	80513	12.8	80
Abilene	HRW	Berthoud	CO	80513	12.9	82
Abilene-Dryland	HRW	Thomas-Co	KS	67701	13.4	59
Abilene-Dryland	HRW	Finney-Co	KS	67846	17.0	63
Abilene-Dryland	HRW	Greeley-Co	KS	67879	14.6	86
Abilene-Irrigated	HRW	Finney-Co	KS	67846	13.9	55
Abilene-Irrigated	HRW	Thomas-Co	KS	67701	12.3	63
Abilene-Irrigated	HRW	Greeley-Co	KS	67879	13.4	66
Agseco-7805	HRW	Republic-Co	KS	66935	14.0	64
Agseco-7805	HRW	Reno-Co	KS	67501	13.8	68
Agseco-7805	HRW	Ellis-Co	KS	67601	14.0	72
Agseco-7805-Dryland	HRW	Thomas-Co	KS	67701	12.3	59
Agseco-7805-Dryland	HRW	Finney-Co	KS	67846	13.7	70
Agseco-7805-Irrigated	HRW	Finney-Co	KS	67846	13.6	64
Agseco-7805-Irrigated	HRW	Thomas-Co	KS	67701	12.2	71
Agseco-7833	HRW	Reno-Co	KS	67501	14.2	57
Agseco-7833	HRW	Ellis-Co	KS	67601	15.8	63
Agseco-7833	HRW	Republic-Co	KS	66935	15.3	63
Agseco-7837	HRW	Franklin-Co	KS	66067	12.5	56
Agseco-7837	HRW	Brown-Co	KS	66434	14.2	61
Agseco-7837	HRW	Harvey-Co	KS	67114	17.1	64
Agseco-7837	HRW	Reno-Co	KS	67501	15.5	64
Agseco-7837	HRW	Republic-Co	KS	66935	15.6	64
Agseco-7837	HRW	Labette	KS	67350	13.5	70
Agseco-7837	HRW	Ellis-Co	KS	67601	15.5	73
Agseco-7837-Dryland	HRW	Finney-Co	KS	67846	15.8	63
Agseco-7837-Dryland	HRW	Thomas-Co	KS	67701	13.1	68
Agseco-7837-Irrigated	HRW	Thomas-Co	KS	67701	12.2	54
Agseco-7837-Irrigated	HRW	Finney-Co	KS	67846	13.4	56
Agseco-7837-Irrigated	HRW	Greeley-Co	KS	67879	13.3	56
Agseco-7837-Irrigated	HRW	Stafford-Co	KS	67576	16.5	59
Agseco-7846	HRW	Reno-Co	KS	67501	14.1	53
Agseco-7846	HRW	Garden-City	KS	67846	12.9	54
Agseco-7846	HRW	Nardin	OK	74646	11.5	56
Agseco-7846	HRW	Ellis-Co	KS	67601	14.9	60
Agseco-7846	HRW	Republic-Co	KS	66935	15.1	60
Agseco-7846	HRW	Brown-Co	KS	66434	13.1	65
Agseco-7846	HRW	Labette	KS	67350	11.5	67
Agseco-7846	HRW	Harvey-Co	KS	67114	16.4	67
Agseco-7846	HRW	Franklin-Co	KS	66067	11.9	67
Agseco-7846	HRW	Geneva	NE	68361	12.7	68



TABLE 4. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY VAR.

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
Agseco-7846	HRW	Berthoud	CO	80513	12.0	83
Agseco-7846-Dryland	HRW	Thomas-Co	KS	67701	12.3	51
Agseco-7846-Dryland	HRW	Finney-Co	KS	67846	15.9	58
Agseco-7846-Dryland	HRW	Greeley-Co	KS	67879	13.7	70
Agseco-7846-Irrigated	HRW	Greeley-Co	KS	67879	13.7	52
Agseco-7846-Irrigated	HRW	Stafford-Co	KS	67576	15.9	52
Agseco-7846-Irrigated	HRW	Finney-Co	KS	67846	12.9	53
Agseco-7846-Irrigated	HRW	Thomas-Co	KS	67701	12.1	67
Agseco-7853-Irrigated	HRW	Stafford-Co	KS	67576	16.4	46
Agseco-7853-Irrigated	HRW	Finney-Co	KS	67846	14.1	57
Amidon	HRS	Langdon	ND	58249	15.8	102
Amidon	HRS	Dickinson	ND	58601	15.9	108
Amidon	HRS	Minot	ND	58701	16.5	110
Amidon	HRS	Fargo	ND	58102	15.8	113
Amidon	HRS	Williston	ND	58801	18.9	114
Anza	HRS	Sutter-Co	CA	95901	9.5	81
Anza	HRS	Butte-Co	CA	95965	9.9	86
Anza	HRS	Merced	CA	95340	10.7	89
Anza	HRS	Davis	CA	95616	12.5	101
Anza	HRS	Kern-Co	CA	93301	12.5	107
Arapahoe	HRW	Sidney	NE	69162	11.4	66
Arapahoe	HRW	Republic-Co	KS	66935	14.8	67
Arapahoe	HRW	Geneva	NE	68361	12.6	72
Arapahoe	HRW	Clay-Center	NE	68933	13.8	73
Arapahoe	HRW	Garden-City	KS	67846	13.2	75
Arapahoe	HRW	Mead	NE	68041	15.4	75
Arapahoe	HRW	Nardin	OK	74646	13.1	75
Arapahoe	HRW	North-Platte	NE	69101	16.1	79
Arapahoe	HRW	Berthoud	CO	80513	12.8	90
Arapahoe	HRW	Alliance	NE	69301	15.0	92
Arapahoe-Dryland	HRW	Thomas-Co	KS	67701	13.3	76
Arapahoe-Irrigated	HRW	Greeley-Co	KS	67879	13.2	66
Arapahoe-Irrigated	HRW	Thomas-Co	KS	67701	12.5	77
Arkan	HRW	Reno-Co	KS	67501	15.4	53
Arkan	HRW	Garden-City	KS	67846	13.5	60
Arkan	HRW	Ellis-Co	KS	67601	15.3	61
Arkan	HRW	Harvey-Co	KS	67114	17.2	61
Arkan	HRW	Nardin	OK	74646	12.5	63
Arkan	HRW	Labette	KS	67350	12.6	64
Arkan	HRW	Brown-Co	KS	66434	13.9	66
Arkan	HRW	Franklin-Co	KS	66067	13.2	67
Arkan	HRW	Geneva	NE	68361	16.3	80
Arkan	HRW	Berthoud	CO	80513	13.1	82
Arkan-Dryland	HRW	Thomas-Co	KS	67701	13.8	58
Arkan-Dryland	HRW	Greeley-Co	KS	67879	14.7	85
Arkan-Irrigated	HRW	Greeley-Co	KS	67879	13.5	57
Arkan-Irrigated	HRW	Finney-Co	KS	67846	13.5	59
Arkan-Irrigated	HRW	Thomas-Co	KS	67701	12.7	63
BH-206	HRW	Harvey-Co	KS	67114	17.1	71
BH-206	HRW	Franklin-Co	KS	66067	13.4	74
BH-206-Dryland	HRW	Greeley-Co	KS	67879	14.6	69

TABLE 4. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY VAR.

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
Baker	HRS	Kern-Co	CA	93301	14.1	77
Baker	HRS	Merced	CA	95340	12.7	83
Baker	HRS	Sutter-Co	CA	95901	11.5	86
Baker	HRS	Butte-Co	CA	95965	12.1	87
Baker	HRS	Davis	CA	95616	14.1	87
Batum	HRW	Wasco-Co	OR	97063	11.6	62
Batum	HRW	Corvallis	OR	97330	10.2	65
Batum	HRW	Pendleton	OR	97801	11.4	94
Becker	SRW	Franklin-Co	KS	66067	11.3	17
Becker	SRW	Brown-Co	KS	66434	12.3	19
Bounty-205	HRW	Garden-City	KS	67846	13.3	45
Bounty-205	HRW	Nardin	OK	74646	12.9	50
Bounty-205	HRW	Geneva	NE	68361	12.9	52
Bounty-205	HRW	Berthoud	CO	80513	11.8	58
Bounty-206	HRW	Labette	KS	67350	13.1	65
Bounty-206	HRW	Reno-Co	KS	67501	16.2	65
Bounty-206	HRW	Brown-Co	KS	66434	14.5	74
Bounty-206-Dryland	HRW	Thomas-Co	KS	67701	12.6	68
Bounty-206-Dryland	HRW	Finney-Co	KS	67846	16.7	81
Bounty-206-Irrigated	HRW	Stafford-Co	KS	67576	17.9	61
Bounty-206-Irrigated	HRW	Thomas-Co	KS	67701	12.4	74
Bounty-206-Irrigated	HRW	Finney-Co	KS	67846	13.5	77
Bounty-WH52498	HRW	Brown-Co	KS	66434	14.2	59
Bounty-WH52498	HRW	Harvey-Co	KS	67114	17.2	60
Bounty-WH52498	HRW	Franklin-Co	KS	66067	14.2	65
Bounty-WH52498	HRW	Reno-Co	KS	67501	15.9	68
Bounty-WH52498-Dryland	HRW	Thomas-Co	KS	67701	13.4	57
Bounty-WH52498-Dryland	HRW	Greeley-Co	KS	67879	14.3	82
Bounty-WH52498-Exp-Dryland	HRW	Finney-Co	KS	67846	17.2	63
Bounty-WH52498-Irrigated	HRW	Thomas-Co	KS	67701	12.8	62
Bounty-WH52498-Irrigated	HRW	Finney-Co	KS	67846	13.8	65
Bronco	HRW	Reno-Co	KS	67501	14.5	56
Bronco	HRW	Harvey-Co	KS	67114	16.4	56
Bronco	HRW	Garden-City	KS	67846	12.5	61
Bronco	HRW	Ellis-Co	KS	67601	14.7	62
Bronco	HRW	Republic-Co	KS	66935	15.0	64
Bronco	HRW	Geneva	NE	68361	12.6	72
Bronco	HRW	Berthoud	CO	80513	11.6	83
Bronco-Dryland	HRW	Thomas-Co	KS	67701	12.0	56
Bronco-Dryland	HRW	Finney-Co	KS	67846	14.5	61
Bronco-Dryland	HRW	Greeley-Co	KS	67879	13.7	68
Brule	HRW	Clay-Center	NE	68933	13.1	59
Brule	HRW	Mead	NE	68041	14.4	61
Brule	HRW	North-Platte	NE	69101	14.2	63
Brule	HRW	Sidney	NE	69162	10.7	66
Brule	HRW	Morris	MN	56267	16.0	69
Brule	HRW	Rosemount	MN	55068	12.2	75
Brule	HRW	Alliance	NE	69301	10.8	76
Butte-86	HRS	Minot	ND	58701	15.5	86
Butte-86	HRS	Morris	MN	56267	14.2	89
Butte-86	HRS	Stephen	MN	56757	15.8	93

TABLE 4. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY VAR.

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
Butte-86	HRS	St-Paul	MN	55101	17.8	93
Butte-86	HRS	Lamberton	MN	56152	16.6	94
Butte-86	HRS	Dickinson	ND	58601	16.6	96
Butte-86	HRS	Bathgate	ND	58216	15.0	96
Butte-86	HRS	Langdon	ND	58249	17.2	96
Butte-86	HRS	Fargo	ND	58102	16.6	99
Butte-86	HRS	Crookston	MN	56716	16.4	99
Butte-86	HRS	Frankfort	SD	57440	13.9	100
Butte-86	HRS	Hancock	MN	56244	16.4	102
Butte-86	HRS	Glenfield	ND	58443	16.8	103
Butte-86	HRS	Williston	ND	58801	19.5	105
Butte-86	HRS	Casselton	ND	58012	16.4	108
Caldwell	SRW	Brown-Co	KS	66434	12.7	24
Caldwell	SRW	Labette	KS	67350	11.2	27
Caldwell	SRW	Franklin-Co	KS	66067	11.1	27
Cardinal	SRW	Brown-Co	KS	66434	12.7	21
Cardinal	SRW	Labette	KS	67350	12.4	26
Cardinal	SRW	Franklin-Co	KS	66067	12.2	30
Carson-Dryland	HRW	Thomas-Co	KS	67701	12.3	66
Celtic	HRS	Lamberton	MN	56152	16.8	88
Celtic	HRS	Stephen	MN	56757	15.9	90
Celtic	HRS	Morris	MN	56267	15.5	91
Celtic	HRS	Crookston	MN	56716	16.0	94
Celtic	HRS	St-Paul	MN	55101	18.2	97
Centurk-78	HRW	Clay-Center	NE	68933	13.1	55
Centurk-78	HRW	Sidney	NE	69162	12.1	58
Centurk-78	HRW	North-Platte	NE	69101	15.1	73
Centurk-78	HRW	Alliance	NE	69301	11.3	76
Centurk-78	HRW	Mead	NE	68041	14.3	78
Century	HRW	Labette	KS	67350	12.3	57
Century	HRW	Nardin	OK	74646	12.0	61
Century	HRW	Brown-Co	KS	66434	12.8	63
Century	HRW	Harvey-Co	KS	67114	15.4	63
Century	HRW	Franklin-Co	KS	66067	12.8	64
Century	HRW	Garden-City	KS	67846	12.7	68
Century	HRW	Reno-Co	KS	67501	14.3	70
Century	HRW	Republic-Co	KS	66935	14.6	71
Century	HRW	Geneva	NE	68361	13.4	75
Century	HRW	Ellis-Co	KS	67601	14.7	80
Century	HRW	Berthoud	CO	80513	11.9	93
Century-Dryland	HRW	Thomas-Co	KS	67701	12.5	64
Century-Dryland	HRW	Greeley-Co	KS	67879	14.0	71
Century-Dryland	HRW	Finney-Co	KS	67846	14.8	75
Century-Irrigated	HRW	Greeley-Co	KS	67879	12.3	53
Century-Irrigated	HRW	Stafford-Co	KS	67576	15.1	59
Century-Irrigated	HRW	Finney-Co	KS	67846	12.9	64
Century-Irrigated	HRW	Thomas-Co	KS	67701	11.0	72
Chisholm	HRW	Woodward	OK	73801	12.9	38
Chisholm	HRW	Lahoma	OK	73754	12.9	42
Chisholm	HRW	Nardin	OK	74646	11.6	45
Chisholm	HRW	Brown-Co	KS	66434	14.8	45



**TABLE 4. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY VAR.**

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
Chisholm	HRW	Garden-City	KS	67846	12.5	46
Chisholm	HRW	Altus	OK	73521	13.7	46
Chisholm	HRW	Labette	KS	67350	11.6	48
Chisholm	HRW	Stillwater	OK	74074	13.6	50
Chisholm	HRW	Franklin-Co	KS	66067	12.3	52
Chisholm	HRW	Geneva	NE	68361	15.2	53
Chisholm	HRW	Berthoud	CO	80513	12.9	63
Chisholm-Dryland	HRW	Greeley-Co	KS	67879	13.7	77
Chisholm-Irrigated	HRW	Greeley-Co	KS	67879	13.0	37
Chisholm-Irrigated	HRW	Goodwell	OK	73939	14.8	43
Cleopatra-(Red)-Dryland	HRW	Finney-Co	KS	67846	17.3	80
Cleopatra-16	HRW	Ellis-Co	KS	67601	16.8	79
Cleopatra-3	HRW	Ellis-Co	KS	67601	16.6	77
Cody	HRW	Clay-Center	NE	68933	13.6	67
Cody	HRW	Republic-Co	KS	66935	14.5	67
Cody	HRW	Sidney	NE	69162	12.0	69
Cody	HRW	North-Platte	NE	69101	15.5	74
Cody	HRW	Mead	NE	68041	14.8	83
Cody	HRW	Alliance	NE	69301	14.5	91
Cody-Dryland	HRW	Thomas-Co	KS	67701	12.3	67
Cody-Dryland	HRW	Greeley-Co	KS	67879	14.4	77
Cody-Irrigated	HRW	Thomas-Co	KS	67701	12.2	78
Colt	HRW	Clay-Center	NE	68933	14.7	46
Colt	HRW	Sidney	NE	69162	13.2	53
Colt	HRW	Mead	NE	68041	16.9	56
Colt	HRW	Republic-Co	KS	66935	15.0	58
Colt	HRW	North-Platte	NE	69101	15.7	59
Colt	HRW	Brown-Co	KS	66434	14.1	68
Colt	HRW	Alliance	NE	69301	11.9	76
Colt-Dryland	HRW	Thomas-Co	KS	67701	12.7	53
Colt-Irrigated	HRW	Greeley-Co	KS	67879	13.2	53
Colt-Irrigated	HRW	Thomas-Co	KS	67701	12.3	67
Daws	SWW	Coulee-City	WA	99115	12.4	30
Daws	SWW	Walla-Walla	WA	99362	11.5	30
Daws	SWW	Pomeroy	WA	99347	9.7	31
Daws	SWW	Pullman	WA	99163	10.4	37
Dodge	HRW	Labette	KS	67350	13.9	54
Dodge	HRW	Reno-Co	KS	67501	16.8	58
Dodge	HRW	Garden-City	KS	67846	14.5	60
Dodge	HRW	Franklin-Co	KS	66067	13.0	64
Dodge	HRW	Harvey-Co	KS	67114	17.8	65
Dodge	HRW	Republic-Co	KS	66935	16.9	68
Dodge	HRW	Nardin	OK	74646	13.8	69
Dodge	HRW	Brown-Co	KS	66434	16.2	72
Dodge	HRW	Geneva	NE	68361	16.6	80
Dodge	HRW	Berthoud	CO	80513	14.1	80
Dodge	HRW	Ellis-Co	KS	67601	17.0	81
Dodge-Dryland	HRW	Thomas-Co	KS	67701	14.8	65
Dodge-Irrigated	HRW	Stafford-Co	KS	67576	15.9	50
Dodge-Irrigated	HRW	Finney-Co	KS	67846	14.1	57
Dodge-Irrigated	HRW	Greeley-Co	KS	67879	15.2	60

TABLE 4. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY VAR.

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
Dodge-Irrigated	HRW	Thomas-Co	KS	67701	13.8	61
Dusty	SWW	Coulee-City	WA	99115	11.4	19
Dusty	SWW	Pullman	WA	99163	10.0	20
Dusty	SWW	Walla-Walla	WA	99362	11.5	24
Dusty	SWW	Pomeroy	WA	99347	8.3	27
FCT'S'	HRS	Pendleton	OR	97801	13.1	78
FCT'S'	HRS	Madras	OR	97741	12.3	80
Field	HRS	Langdon	ND	58249	16.1	81
Field	HRS	Minot	ND	58701	15.0	82
Field	HRS	Dickinson	ND	58601	16.3	85
Field	HRS	Williston	ND	58801	18.9	89
Field	HRS	Fargo	ND	58102	15.6	90
Grandin	HRS	Langdon	ND	58249	16.7	88
Grandin	HRS	Minot	ND	58701	16.5	88
Grandin	HRS	Dickinson	ND	58601	17.5	98
Grandin	HRS	Fargo	ND	58102	16.6	98
Grandin	HRS	Williston	ND	58801	19.2	103
Guard	HRS	Lamberton	MN	56152	16.3	76
Guard	HRS	Crookston	MN	56716	15.8	80
Guard	HRS	St-Paul	MN	55101	17.6	82
Gus	HRS	Minot	ND	58701	16.0	93
Gus	HRS	Langdon	ND	58249	17.1	94
Gus	HRS	Dickinson	ND	58601	17.7	99
Gus	HRS	Fargo	ND	58102	16.2	100
Gus	HRS	Williston	ND	58801	20.1	107
Hancock	SRW	Franklin-Co	KS	66067	12.1	27
Hancock	SRW	Brown-Co	KS	66434	13.7	63
Hawk	HRW	Reno-Co	KS	67501	14.0	62
Hawk	HRW	Nardin	OK	74646	12.1	66
Hawk	HRW	Geneva	NE	68361	12.5	67
Hawk	HRW	Harvey-Co	KS	67114	16.0	69
Hawk	HRW	Garden-City	KS	67846	12.8	73
Hawk	HRW	Berthoud	CO	80513	12.0	86
Hawk-Dryland	HRW	Thomas-Co	KS	67701	11.9	71
Hawk-Dryland	HRW	Greeley-Co	KS	67879	14.1	75
Hawk-Dryland	HRW	Finney-Co	KS	67846	15.7	81
Hawk-Irrigated	HRW	Greeley-Co	KS	67879	12.9	57
Hawk-Irrigated	HRW	Finney-Co	KS	67846	13.1	61
Hawk-Irrigated	HRW	Thomas-Co	KS	67701	11.5	68
Hill	SWW	Corvallis	OR	97330	9.9	27
Hill	SWW	Wasco-Co	OR	97063	9.8	29
Hill	SWW	Pendleton	OR	97801	8.9	37
Hill-81	SWW	Coulee-City	WA	99115	13.6	22
Hill-81	SWW	Pomeroy	WA	99347	8.4	24
Hill-81	SWW	Pullman	WA	99163	10.5	33
Hill-81	SWW	Walla-Walla	WA	99362	12.2	35
Huntsman		Pullman	WA	99163	11.1	29
Hyak	SWW	Coulee-City	WA	99115	11.6	34
Hyak	SWW	Pomeroy	WA	99347	9.8	35
Hyak	SWW	Walla-Walla	WA	99362	12.2	40
Hyak	SWW	Pullman	WA	99163	10.0	41

**TABLE 4. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY VAR.**

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
KS8010*-72-Exp	HRW	Republic-Co	KS	66935	15.1	62
KS8010*-72-Exp	HRW	Harvey-Co	KS	67114	16.2	65
KS8010*-72-Exp	HRW	Reno-Co	KS	67501	14.9	65
KS8010*-72-Exp	HRW	Labette	KS	67350	12.5	70
KS8010*-72-Exp-Irrigated	HRW	Stafford-Co	KS	67576	16.4	58
KS8010-1-4-2-Exp	HRW	Labette	KS	67350	13.1	60
KS8010-1-4-2-Exp	HRW	Harvey-Co	KS	67114	16.9	62
KS8010-1-4-2-Exp	HRW	Reno-Co	KS	67501	14.8	65
KS8010-1-4-2-Exp	HRW	Republic-Co	KS	66935	14.9	71
KS8010-1-4-2-Exp-Irrigated	HRW	Stafford-Co	KS	67576	16.5	53
KS84HW196	HRW	Reno-Co	KS	67501	14.8	63
KS84HW196	HRW	Ellis-Co	KS	67601	15.1	69
KS84HW196-Dryland	HRW	Thomas-Co	KS	67701	12.7	63
KS84HW196-Dryland	HRW	Finney-Co	KS	67846	15.8	66
KS84HW196-Dryland	HRW	Greeley-Co	KS	67879	14.9	75
KS84HW196-Irrigated	HRW	Stafford-Co	KS	67576	15.2	49
KS84HW196-Irrigated	HRW	Finney-Co	KS	67846	13.4	53
KS84HW196-Irrigated	HRW	Greeley-Co	KS	67879	13.2	61
KS84HW196-Irrigated	HRW	Thomas-Co	KS	67701	12.2	65
Karl	HRW	Woodward	OK	73801	14.4	47
Karl	HRW	Lahoma	OK	73754	14.5	54
Karl	HRW	Labette	KS	67350	13.9	59
Karl	HRW	Nardin	OK	74646	13.6	62
Karl	HRW	Stillwater	OK	74074	16.0	63
Karl	HRW	Garden-City	KS	67846	13.7	63
Karl	HRW	Brown-Co	KS	66434	16.2	68
Karl	HRW	Altus	OK	73521	16.5	68
Karl	HRW	Reno-Co	KS	67501	16.6	70
Karl	HRW	Harvey-Co	KS	67114	17.9	70
Karl	HRW	Ellis-Co	KS	67601	17.6	71
Karl	HRW	Franklin-Co	KS	66067	14.2	72
Karl	HRW	Republic-Co	KS	66935	17.1	73
Karl	HRW	Berthoud	CO	80513	13.7	80
Karl	HRW	Geneva	NE	68361	17.3	83
Karl-Dryland	HRW	Thomas-Co	KS	67701	15.1	66
Karl-Dryland	HRW	Finney-Co	KS	67846	18.4	72
Karl-Irrigated	HRW	Greeley-Co	KS	67879	14.0	55
Karl-Irrigated	HRW	Finney-Co	KS	67846	13.7	55
Karl-Irrigated	HRW	Thomas-Co	KS	67701	13.6	64
Karl-Irrigated	HRW	Stafford-Co	KS	67576	18.7	67
Karl-Irrigated	HRW	Goodwell	OK	73939	16.1	68
Klasic	HWW	Merced	CA	95340	8.6	67
Klasic	HWW	Sutter-Co	CA	95901	10.2	70
Klasic	HWW	Butte-Co	CA	95965	11.2	73
Klasic	HWW	Davis	CA	95616	13.4	79
Klasic	HWW	Kern-Co	CA	93301	14.0	81
Lamar-Dryland	HRW	Thomas-Co	KS	67701	12.7	69
Lamar-Dryland	HRW	Greeley-Co	KS	67879	14.3	79
Larned	HRW	Labette	KS	67350	12.7	59
Larned	HRW	Reno-Co	KS	67501	14.1	66
Larned	HRW	Brown-Co	KS	66434	12.3	68



TABLE 4. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY VAR.

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
Larned	HRW	Franklin-Co	KS	66067	12.4	68
Larned	HRW	Harvey-Co	KS	67114	16.4	69
Larned	HRW	Republic-Co	KS	66935	14.4	73
Larned	HRW	Ellis-Co	KS	67601	15.1	78
Larned-Dryland	HRW	Thomas-Co	KS	67701	12.3	67
Larned-Dryland	HRW	Finney-Co	KS	67846	14.6	77
Len	HRS	Langdon	ND	58249	15.1	89
Len	HRS	Minot	ND	58701	16.3	90
Len	HRS	Dickinson	ND	58601	17.3	90
Len	HRS	Bathgate	ND	58216	14.3	92
Len	HRS	Frankfort	SD	57440	15.0	92
Len	HRS	Fargo	ND	58102	16.5	95
Len	HRS	Williston	ND	58801	19.9	95
Len	HRS	Glenfield	ND	58443	17.9	96
Len	HRS	Hancock	MN	56244	16.1	98
Len	HRS	Casselton	ND	58012	17.1	109
Lewjain	SWW	Coulee-City	WA	99115	12.4	20
Lewjain	SWW	Pomeroy	WA	99347	8.4	28
Lewjain	SWW	Walla-Walla	WA	99362	12.2	30
Lewjain	SWW	Pullman	WA	99163	11.0	31
Lincoln	SRW	Labette	KS	67350	11.4	19
Lincoln	SRW	Franklin-Co	KS	66067	11.1	22
Lincoln	SRW	Brown-Co	KS	66434	13.3	30
Luke-WA7529	Mix	Pullman	WA	99163	10.4	26
MBS-8625	HRW	Ellis-Co	KS	67601	16.0	64
MBS-8625-Irrigated	HRW	Thomas-Co	KS	67701	12.8	59
MBS-8645	HRW	Reno-Co	KS	67501	15.7	56
MBS-8645	HRW	Franklin-Co	KS	66067	13.5	66
MBS-8645-Exp	HRW	Labette	KS	67350	13.1	63
MBS-8645-Irrigated	HRW	Stafford-Co	KS	67576	16.5	52
MBS-8645-Irrigated	HRW	Finney-Co	KS	67846	13.6	53
Madsen	SWW	Pullman	WA	99163	11.2	26
Madsen	SWW	Corvallis	OR	97330	10.4	29
Madsen	SWW	Wasco-Co	OR	97063	9.8	31
Madsen	SWW	Pomeroy	WA	99347	8.8	31
Madsen	SWW	Pendleton	OR	97801	8.2	32
Madsen	SWW	Moro	OR	97039	11.8	33
Madsen	SWW	Coulee-City	WA	99115	12.0	34
Madsen	SWW	Walla-Walla	WA	99362	13.0	41
Malcolm	SWW	Wasco-Co	OR	97063	9.5	24
Malcolm	SWW	Corvallis	OR	97330	9.2	26
Malcolm	SWW	Moro	OR	97039	11.7	26
Malcolm	SWW	Pomeroy	WA	99347	9.4	29
Malcolm	SWW	Coulee-City	WA	99115	10.9	32
Malcolm	SWW	Pullman	WA	99163	11.3	35
Malcolm	SWW	Walla-Walla	WA	99362	11.6	36
Malcolm	SWW	Pendleton	OR	97801	8.8	38
Marshall	HRS	Minot	ND	58701	15.4	78
Marshall	HRS	Crookston	MN	56716	16.0	82
Marshall	HRS	Fargo	ND	58102	15.1	84
Marshall	HRS	Morris	MN	56267	15.3	84

**TABLE 4. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY VAR.**

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
Marshall	HRS	Langdon	ND	58249	15.0	85
Marshall	HRS	St-Paul	MN	55101	18.1	85
Marshall	HRS	Lamberton	MN	56152	16.0	86
Marshall	HRS	Bathgate	ND	58216	14.1	86
Marshall	HRS	Hancock	MN	56244	14.6	87
Marshall	HRS	Stephen	MN	56757	16.2	88
Marshall	HRS	Frankfort	SD	57440	12.7	89
Marshall	HRS	Glenfield	ND	58443	16.8	91
Marshall	HRS	Dickinson	ND	58601	16.9	94
Marshall	HRS	Williston	ND	58801	18.9	101
Marshall	HRS	Casselton	ND	58012	15.9	103
McKay	HRS	Madras	OR	97741	15.8	77
McKay	HRS	Pendleton	OR	97801	14.1	90
Mesa	HRW	Franklin-Co	KS	66067	12.7	62
Mesa	HRW	Garden-City	KS	67846	13.0	64
Mesa	HRW	Brown-Co	KS	66434	13.8	67
Mesa	HRW	Republic-Co	KS	66935	15.5	67
Mesa	HRW	Labette	KS	67350	11.8	67
Mesa	HRW	Ellis-Co	KS	67601	15.3	69
Mesa	HRW	Harvey-Co	KS	67114	16.2	70
Mesa	HRW	Reno-Co	KS	67501	15.2	73
Mesa	HRW	Nardin	OK	74646	12.0	78
Mesa	HRW	Berthoud	CO	80513	13.1	80
Mesa	HRW	Geneva	NE	68361	15.1	81
Mesa-Dryland	HRW	Thomas-Co	KS	67701	13.1	65
Mesa-Dryland	HRW	Finney-Co	KS	67846	16.6	76
Mesa-Dryland	HRW	Greeley-Co	KS	67879	14.3	77
Mesa-Irrigated	HRW	Greeley-Co	KS	67879	12.8	51
Mesa-Irrigated	HRW	Finney-Co	KS	67846	13.0	70
Mesa-Irrigated	HRW	Thomas-Co	KS	67701	12.4	70
Minnpro	HRS	Langdon	ND	58249	17.0	83
Minnpro	HRS	Lamberton	MN	56152	18.3	85
Minnpro	HRS	Minot	ND	58701	17.2	87
Minnpro	HRS	St-Paul	MN	55101	20.1	91
Minnpro	HRS	Stephen	MN	56757	17.3	95
Minnpro	HRS	Fargo	ND	58102	17.0	99
Minnpro	HRS	Dickinson	ND	58601	18.3	99
Minnpro	HRS	Crookston	MN	56716	19.0	99
Minnpro	HRS	Morris	MN	56267	16.9	99
Minnpro	HRS	Williston	ND	58801	21.1	101
Mustang	HRW	Reno-Co	KS	67501	15.0	54
Mustang	HRW	Nardin	OK	74646	12.2	64
Mustang	HRW	Garden-City	KS	67846	12.9	66
Mustang	HRW	Harvey-Co	KS	67114	16.5	66
Mustang	HRW	Franklin-Co	KS	66067	12.1	69
Mustang	HRW	Geneva	NE	68361	14.2	70
Mustang	HRW	Berthoud	CO	80513	11.4	84
Mustang-Irrigated	HRW	Stafford-Co	KS	67576	16.0	59
ND-650	HRS	Minot	ND	58701	17.4	97
ND-650	HRS	Langdon	ND	58249	17.8	105
ND-650	HRS	Dickinson	ND	58601	18.1	108

TABLE 4. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY VAR.

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
ND-650	HRS	Fargo	ND	58102	17.0	110
ND-650	HRS	Williston	ND	58801	20.2	113
ND-652	HRS	Minot	ND	58701	16.9	99
ND-652	HRS	Williston	ND	58801	19.3	100
ND-652	HRS	Dickinson	ND	58601	18.2	101
ND-652	HRS	Fargo	ND	58102	16.7	103
ND-652	HRS	Langdon	ND	58249	17.4	105
ND-653	HRS	Minot	ND	58701	15.6	81
ND-653	HRS	Langdon	ND	58249	17.0	83
ND-653	HRS	Williston	ND	58801	18.5	90
ND-653	HRS	Dickinson	ND	58601	16.2	91
ND-653	HRS	Fargo	ND	58102	16.5	93
ND-654	HRS	Minot	ND	58701	16.1	91
ND-654	HRS	Langdon	ND	58249	17.4	91
ND-654	HRS	Dickinson	ND	58601	16.9	94
ND-654	HRS	Williston	ND	58801	18.6	96
ND-654	HRS	Fargo	ND	58102	17.1	99
Newton	HRW	Brown-Co	KS	66434	12.3	56
Newton	HRW	Labette	KS	67350	11.9	58
Newton	HRW	Geneva	NE	68361	12.5	60
Newton	HRW	Reno-Co	KS	67501	14.6	60
Newton	HRW	Harvey-Co	KS	67114	15.8	61
Newton	HRW	Republic-Co	KS	66935	14.7	61
Newton	HRW	Franklin-Co	KS	66067	12.5	63
Newton	HRW	Garden-City	KS	67846	13.3	67
Newton	HRW	Nardin	OK	74646	12.1	69
Newton	HRW	Berthoud	CO	80513	12.3	89
Newton-Dryland	HRW	Thomas-Co	KS	67701	12.1	57
Newton-Dryland	HRW	Greeley-Co	KS	67879	13.9	64
Newton-Dryland	HRW	Finney-Co	KS	67846	15.7	67
Newton-Irrigated	HRW	Stafford-Co	KS	67576	15.0	47
Newton-Irrigated	HRW	Greeley-Co	KS	67879	12.9	50
Newton-Irrigated	HRW	Finney-Co	KS	67846	13.1	60
Newton-Irrigated	HRW	Thomas-Co	KS	67701	11.3	68
Norkan	HRW	Reno-Co	KS	67501	16.0	56
Norkan	HRW	Labette	KS	67350	13.1	63
Norkan	HRW	Brown-Co	KS	66434	14.0	63
Norkan	HRW	Nardin	OK	74646	13.2	64
Norkan	HRW	Franklin-Co	KS	66067	13.6	65
Norkan	HRW	Harvey-Co	KS	67114	17.3	67
Norkan	HRW	Republic-Co	KS	66935	15.5	70
Norkan	HRW	Garden-City	KS	67846	14.0	70
Norkan	HRW	Geneva	NE	68361	13.4	76
Norkan	HRW	Berthoud	CO	80513	13.4	82
Norkan-Dryland	HRW	Thomas-Co	KS	67701	13.7	66
Norkan-Dryland	HRW	Finney-Co	KS	67846	17.6	74
Norkan-Dryland	HRW	Greeley-Co	KS	67879	16.0	80
Norkan-Irrigated	HRW	Greeley-Co	KS	67879	13.8	52
Norkan-Irrigated	HRW	Finney-Co	KS	67846	14.0	61
Norkan-Irrigated	HRW	Thomas-Co	KS	67701	12.7	67
Nugaines	SWW	Pullman	WA	99163	10.9	25



**TABLE 4. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY VAR.**

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
Nugaines	SWW	Coulee-City	WA	99115	12.4	25
Nugaines	SWW	Pomeroy	WA	99347	8.8	30
Nugaines	SWW	Walla-Walla	WA	99362	11.3	31
OK84284	HRW	Woodward	OK	73801	14.0	52
OK84286	HRW	Woodward	OK	73801	13.5	59
OK84286	HRW	Lahoma	OK	73754	13.1	60
OK84286	HRW	Stillwater	OK	74074	14.5	61
OK84286	HRW	Altus	OK	73521	15.1	71
OK84286-Irrigated	HRW	Goodwell	OK	73939	14.4	62
OK84287	HRW	Lahoma	OK	73754	13.5	57
OK84287	HRW	Stillwater	OK	74074	14.3	66
OK84287	HRW	Altus	OK	73521	15.0	73
OK84287-Irrigated	HRW	Goodwell	OK	73939	14.3	64
OK86215	HRW	Lahoma	OK	73754	13.8	44
OK86215	HRW	Woodward	OK	73801	14.2	56
OK86215	HRW	Altus	OK	73521	14.8	56
OK86215	HRW	Stillwater	OK	74074	14.9	62
OK86215-Irrigated	HRW	Goodwell	OK	73939	15.3	61
OK86223	HRW	Lahoma	OK	73754	13.4	44
OK86223	HRW	Woodward	OK	73801	13.4	45
OK86223	HRW	Stillwater	OK	74074	14.6	49
OK86223	HRW	Altus	OK	73521	15.0	55
OK86223-Irrigated	HRW	Goodwell	OK	73939	14.4	55
OK87542	HRW	Lahoma	OK	73754	13.3	42
OK87542	HRW	Woodward	OK	73801	12.7	43
OK87542	HRW	Stillwater	OK	74074	14.0	53
OK87542	HRW	Altus	OK	73521	15.1	53
OK87542-Irrigated	HRW	Goodwell	OK	73939	14.3	51
OK87575	HRW	Lahoma	OK	73754	13.2	50
OK87575	HRW	Altus	OK	73521	14.5	52
OK87575	HRW	Woodward	OK	73801	12.3	57
OK87575	HRW	Stillwater	OK	74074	14.5	59
OK87575-Irrigated	HRW	Goodwell	OK	73939	14.1	62
OK87630	HRW	Woodward	OK	73801	12.8	39
OK87630	HRW	Lahoma	OK	73754	13.5	41
OK87630	HRW	Stillwater	OK	74074	13.6	50
OK87630	HRW	Altus	OK	73521	13.9	50
OK87630-Irrigated	HRW	Goodwell	OK	73939	15.6	51
OK87W663	HRW	Lahoma	OK	73754	13.2	43
OK87W663	HRW	Altus	OK	73521	14.2	46
OK87W663	HRW	Stillwater	OK	74074	14.4	49
OK87W663	HRW	Woodward	OK	73801	12.0	53
OK87W663-Irrigated	HRW	Goodwell	OK	73939	14.2	48
OR83801	SWW	Wasco-Co	OR	97063	10.0	16
OR83801	SWW	Moro	OR	97039	11.3	24
OR83801	SWW	Corvallis	OR	97330	11.6	34
OR83801	SWW	Pendleton	OR	97801	11.2	36
ORCR8313	HRW	Wasco-Co	OR	97063	10.4	70
ORCR8313	HRW	Pendleton	OR	97801	12.3	74
ORCR8313	HRW	Moro	OR	97039	10.2	75
ORCR8313	HRW	Corvallis	OR	97330	11.4	77

TABLE 4. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY VAR.

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
ORCR8602	HRW	Wasco-Co	OR	97063	10.1	75
ORCR8602	HRW	Corvallis	OR	97330	10.9	83
ORCR8602	HRW	Moro	OR	97039	11.0	85
ORCR8602	HRW	Pendleton	OR	97801	11.2	96
OSU-21	SWW	Corvallis	OR	97330	9.5	25
OSU-21	SWW	Moro	OR	97039	10.5	40
OSU-21	SWW	Pendleton	OR	97801	10.0	52
Pioneer-2154	HRW	Garden-City	KS	67846	13.6	82
Pioneer-2154	HRW	Geneva	NE	68361	13.3	85
Pioneer-2154	HRW	Nardin	OK	74646	12.7	88
Pioneer-2154	HRW	Berthoud	CO	80513	11.5	97
Pioneer-2157	HRW	Harvey-Co	KS	67114	17.1	55
Pioneer-2157	HRW	Brown-Co	KS	66434	14.7	55
Pioneer-2157	HRW	Franklin-Co	KS	66067	14.1	55
Pioneer-2157	HRW	Reno-Co	KS	67501	15.5	55
Pioneer-2157	HRW	Ellis-Co	KS	67601	16.0	55
Pioneer-2157	HRW	Garden-City	KS	67846	13.7	56
Pioneer-2157	HRW	Republic-Co	KS	66935	15.4	61
Pioneer-2157	HRW	Geneva	NE	68361	13.5	61
Pioneer-2157	HRW	Labette	KS	67350	13.0	66
Pioneer-2157	HRW	Nardin	OK	74646	13.2	69
Pioneer-2157	HRW	Berthoud	CO	80513	12.7	79
Pioneer-2157-Dryland	HRW	Greeley-Co	KS	67879	14.8	62
Pioneer-2157-Dryland	HRW	Finney-Co	KS	67846	16.1	67
Pioneer-2157-Irrigated	HRW	Greeley-Co	KS	67879	13.3	41
Pioneer-2157-Irrigated	HRW	Stafford-Co	KS	67576	16.6	47
Pioneer-2157-Irrigated	HRW	Finney-Co	KS	67846	12.7	60
Pioneer-2163	HRW	Brown-Co	KS	66434	13.1	59
Pioneer-2163	HRW	Reno-Co	KS	67501	13.8	60
Pioneer-2163	HRW	Ellis-Co	KS	67601	14.4	62
Pioneer-2163	HRW	Labette	KS	67350	12.6	66
Pioneer-2163	HRW	Franklin-Co	KS	66067	12.1	67
Pioneer-2163	HRW	Harvey-Co	KS	67114	15.3	71
Pioneer-2163	HRW	Republic-Co	KS	66935	14.6	73
Pioneer-2163-Dryland	HRW	Thomas-Co	KS	67701	12.5	60
Pioneer-2163-Dryland	HRW	Finney-Co	KS	67846	14.9	64
Pioneer-2163-Irrigated	HRW	Greeley-Co	KS	67879	12.9	58
Pioneer-2163-Irrigated	HRW	Thomas-Co	KS	67701	12.3	60
Pioneer-2163-Irrigated	HRW	Finney-Co	KS	67846	12.6	61
Pioneer-2172	HRW	Nardin	OK	74646	11.7	68
Pioneer-2172	HRW	Franklin-Co	KS	66067	12.3	70
Pioneer-2172	HRW	Brown-Co	KS	66434	14.2	77
Pioneer-2172	HRW	Geneva	NE	68361	14.1	79
Pioneer-2172	HRW	Labette	KS	67350	12.2	80
Pioneer-2172	HRW	Ellis-Co	KS	67601	15.6	85
Pioneer-2172	HRW	Berthoud	CO	80513	11.8	95
Pioneer-2173	HRW	Garden-City	KS	67846	13.4	76
Pioneer-2180	HRW	Harvey-Co	KS	67114	16.2	74
Pioneer-2180	HRW	Garden-City	KS	67846	13.4	79
Pioneer-2180	HRW	Republic-Co	KS	66935	15.9	81
Pioneer-2180	HRW	Labette	KS	67350	12.6	83

TABLE 4. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY VAR.

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
Pioneer-2180	HRW	Reno-Co	KS	67501	14.8	85
Pioneer-2180	HRW	Nardin	OK	74646	12.5	87
Pioneer-2180	HRW	Geneva	NE	68361	16.5	97
Pioneer-2180	HRW	Berthoud	CO	80513	12.7	106
Pioneer-2180-Irrigated	HRW	Stafford-Co	KS	67576	16.8	70
Pioneer-2369	HRS	Lamberton	MN	56152	17.3	92
Pioneer-2369	HRS	Morris	MN	56267	15.0	93
Pioneer-2369	HRS	St-Paul	MN	55101	18.6	97
Pioneer-2369	HRS	Stephen	MN	56757	16.4	97
Pioneer-2369	HRS	Crookston	MN	56716	17.1	98
Pioneer-2369	HRS	Bathgate	ND	58216	14.0	98
Pioneer-2369	HRS	Frankfort	SD	57440	13.0	103
Pioneer-2369	HRS	Glenfield	ND	58443	15.9	104
Pioneer-2369	HRS	Hancock	MN	56244	15.6	105
Pioneer-2369	HRS	Casselton	ND	58012	16.0	113
Pioneer-2370	HRS	Hancock	MN	56244	15.4	90
Pioneer-2370	HRS	Frankfort	SD	57440	13.1	94
Pioneer-2370	HRS	Bathgate	ND	58216	13.7	95
Pioneer-2370	HRS	Glenfield	ND	58443	18.1	100
Pioneer-2370	HRS	Casselton	ND	58012	16.6	103
Pioneer-2375	HRS	Frankfort	SD	57440	11.6	87
Pioneer-2375	HRS	Bathgate	ND	58216	14.3	97
Pioneer-2375	HRS	Glenfield	ND	58443	15.8	99
Pioneer-2375	HRS	Casselton	ND	58012	15.9	104
Pioneer-2375	HRS	Hancock	MN	56244	15.3	107
Pioneer-2385	HRS	Langdon	ND	58249	16.2	86
Pioneer-2385	HRS	Minot	ND	58701	17.1	90
Pioneer-2385	HRS	Hancock	MN	56244	16.0	90
Pioneer-2385	HRS	Bathgate	ND	58216	14.5	93
Pioneer-2385	HRS	Frankfort	SD	57440	14.6	93
Pioneer-2385	HRS	Williston	ND	58801	19.0	94
Pioneer-2385	HRS	Glenfield	ND	58443	17.6	95
Pioneer-2385	HRS	Dickinson	ND	58601	17.4	96
Pioneer-2385	HRS	Casselton	ND	58012	16.5	100
Pioneer-2385	HRS	Fargo	ND	58102	17.1	109
Pioneer-2551	SRW	Brown-Co	KS	66434	13.2	22
Pioneer-2551	SRW	Franklin-Co	KS	66067	12.1	25
Pioneer-2551	SRW	Labette	KS	67350	12.8	30
Probrand-775	HRS	Davis	CA	95616	14.9	66
Probrand-775	HRS	Merced	CA	95340	8.7	73
Probrand-775	HRS	Kern-Co	CA	93301	13.5	79
Probrand-775	HRS	Butte-Co	CA	95965	10.8	79
Probrand-775	HRS	Sutter-Co	CA	95901	10.3	80
Quantum-561	HRW	Brown-Co	KS	66434	14.6	42
Quantum-561	HRW	Republic-Co	KS	66935	15.2	54
Quantum-562	HRW	Republic-Co	KS	66935	14.5	56
Quantum-562	HRW	Ellis-Co	KS	67601	15.3	62
Quantum-562	HRW	Garden-City	KS	67846	13.1	67
Quantum-562	HRW	Nardin	OK	74646	12.8	67
Quantum-562	HRW	Berthoud	CO	80513	12.1	82
Quantum-562-Dryland	HRW	Thomas-Co	KS	67701	12.4	62



TABLE 4. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY VAR.

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
Quantum-562-Dryland	HRW	Finney-Co	KS	67846	16.3	64
Quantum-562-Dryland	HRW	Greeley-Co	KS	67879	14.1	66
Quantum-562-Irrigated	HRW	Greeley-Co	KS	67879	13.0	54
Quantum-562-Irrigated	HRW	Finney-Co	KS	67846	13.4	54
Quantum-562-Irrigated	HRW	Thomas-Co	KS	67701	12.0	69
Quantum-567	HRW	Geneva	NE	68361	11.6	59
Quantum-574	HRW	Reno-Co	KS	67501	16.0	44
Quantum-574	HRW	Brown-Co	KS	66434	15.2	53
Quantum-574	HRW	Franklin-Co	KS	66067	13.0	53
Quantum-574	HRW	Harvey-Co	KS	67114	16.9	54
Quantum-578	HRW	Garden-City	KS	67846	13.2	63
Quantum-578	HRW	Nardin	OK	74646	12.7	64
Quantum-578	HRW	Geneva	NE	68361	14.1	69
Quantum-578	HRW	Berthoud	CO	80513	12.7	82
Quantum-578-Irrigated	HRW	Greeley-Co	KS	67879	13.2	50
Quantum-578-Irrigated	HRW	Finney-Co	KS	67846	13.6	51
Quantum-578-Irrigated	HRW	Thomas-Co	KS	67701	12.6	59
Quantun-574	HRW	Labette	KS	67350	13.5	50
Redland	HRW	Clay-Center	NE	68933	13.0	55
Redland	HRW	North-Platte	NE	69101	14.1	62
Redland	HRW	Brown-Co	KS	66434	11.8	64
Redland	HRW	Geneva	NE	68361	11.2	64
Redland	HRW	Mead	NE	68041	13.8	67
Redland	HRW	Sidney	NE	69162	10.2	68
Redland	HRW	Nardin	OK	74646	11.7	69
Redland	HRW	Garden-City	KS	67846	12.6	72
Redland	HRW	Alliance	NE	69301	12.9	77
Redland	HRW	Berthoud	CO	80513	11.6	86
Redland-Dryland	HRW	Finney-Co	KS	67846	14.7	61
Redland-Dryland	HRW	Thomas-Co	KS	67701	11.9	66
Rio-Blanco	HWW	Labette	KS	67350	12.4	58
Rio-Blanco	HWW	Republic-Co	KS	66935	15.1	59
Rio-Blanco	HWW	Franklin-Co	KS	66067	12.5	60
Rio-Blanco	HWW	Nardin	OK	74646	12.2	61
Rio-Blanco	HWW	Garden-City	KS	67846	13.4	62
Rio-Blanco	HWW	Ellis-Co	KS	67601	15.1	63
Rio-Blanco	HWW	Reno-Co	KS	67501	15.1	65
Rio-Blanco	HWW	Harvey-Co	KS	67114	16.9	67
Rio-Blanco	HWW	Brown-Co	KS	66434	13.2	72
Rio-Blanco	HWW	Berthoud	CO	80513	12.4	77
Rio-Blanco	HWW	Geneva	NE	68361	14.1	78
Rio-Blanco-Dryland	HWW	Thomas-Co	KS	67701	12.8	58
Rio-Blanco-Dryland	HWW	Greeley-Co	KS	67879	14.8	71
Rio-Blanco-Irrigated	HWW	Finney-Co	KS	67846	13.7	52
Rio-Blanco-Irrigated	HWW	Greeley-Co	KS	67879	13.4	54
Rio-Blanco-Irrigated	HWW	Thomas-Co	KS	67701	12.2	69
Rose	HRW	Morris	MN	56267	16.6	78
Rose	HRW	Rosemount	MN	55068	12.8	84
Roughrider	HRW	Rosemount	MN	55068	13.0	72
Roughrider	HRW	Morris	MN	56267	18.1	81
Scout-66	HRW	Reno-Co	KS	67501	14.7	65

TABLE 4. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY VAR.

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
Scout-66	HRW	Harvey-Co	KS	67114	16.1	69
Scout-66	HRW	Franklin-Co	KS	66067	12.8	70
Scout-66	HRW	Brown-Co	KS	66434	13.3	73
Scout-66	HRW	Republic-Co	KS	66935	15.1	74
Scout-66	HRW	Labette	KS	67350	12.9	76
Scout-66	HRW	Ellis-Co	KS	67601	15.0	81
Scout-66-Dryland	HRW	Thomas-Co	KS	67701	12.1	69
Scout-66-Dryland	HRW	Finney-Co	KS	67846	14.8	73
Serra	HRS	Davis	CA	95616	13.5	68
Serra	HRS	Sutter-Co	CA	95901	10.1	72
Serra	HRS	Merced	CA	95340	8.4	74
Serra	HRS	Kern-Co	CA	93301	13.1	75
Serra	HRS	Butte-Co	CA	95965	10.0	75
Sierra	HRW	Harvey-Co	KS	67114	16.3	57
Sierra	HRW	Reno-Co	KS	67501	14.7	60
Sierra	HRW	Franklin-Co	KS	66067	13.0	62
Sierra	HRW	Republic-Co	KS	66935	15.0	64
Sierra	HRW	Brown-Co	KS	66434	14.1	65
Sierra	HRW	Geneva	NE	68361	12.8	68
Sierra	HRW	Labette	KS	67350	13.0	68
Sierra	HRW	Ellis-Co	KS	67601	15.0	71
Sierra	HRW	Garden-City	KS	67846	13.7	71
Sierra	HRW	Berthoud	CO	80513	12.1	86
Sierra-Dryland	HRW	Thomas-Co	KS	67701	12.7	63
Sierra-Dryland	HRW	Greeley-Co	KS	67879	13.8	71
Sierra-Dryland	HRW	Finney-Co	KS	67846	15.3	79
Sierra-Irrigated	HRW	Greeley-Co	KS	67879	13.2	63
Sierra-Irrigated	HRW	Finney-Co	KS	67846	13.5	66
Sierra-Irrigated	HRW	Thomas-Co	KS	67701	12.6	73
Siouxland	HRW	Stillwater	OK	74074	14.8	56
Siouxland	HRW	Woodward	OK	73801	12.7	58
Siouxland	HRW	Clay-Center	NE	68933	13.9	59
Siouxland	HRW	Lahoma	OK	73754	13.9	60
Siouxland	HRW	Franklin-Co	KS	66067	12.7	60
Siouxland	HRW	Reno-Co	KS	67501	14.2	62
Siouxland	HRW	Labette	KS	67350	12.4	64
Siouxland	HRW	Harvey-Co	KS	67114	16.4	66
Siouxland	HRW	Sidney	NE	69162	13.4	68
Siouxland	HRW	Republic-Co	KS	66935	15.1	68
Siouxland	HRW	Mead	NE	68041	15.0	71
Siouxland	HRW	Ellis-Co	KS	67601	15.3	71
Siouxland	HRW	North-Platte	NE	69101	15.3	71
Siouxland	HRW	Altus	OK	73521	14.7	73
Siouxland	HRW	Geneva	NE	68361	13.2	73
Siouxland	HRW	Nardin	OK	74646	12.5	73
Siouxland	HRW	Brown-Co	KS	66434	13.4	74
Siouxland	HRW	Garden-City	KS	67846	13.3	80
Siouxland	HRW	Berthoud	CO	80513	12.9	84
Siouxland	HRW	Alliance	NE	69301	11.8	88
Siouxland-Dryland	HRW	Thomas-Co	KS	67701	12.7	69
Siouxland-Dryland	HRW	Finney-Co	KS	67846	15.9	74

TABLE 4. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY VAR.

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
Siouxland-Irrigated	HRW	Greeley-Co	KS	67879	12.5	47
Siouxland-Irrigated	HRW	Finney-Co	KS	67846	13.6	49
Siouxland-Irrigated	HRW	Stafford-Co	KS	67576	16.8	61
Siouxland-Irrigated	HRW	Goodwell	OK	73939	14.2	71
Siouxland-Irrigated	HRW	Thomas-Co	KS	67701	11.9	78
Stallion	HRW	Garden-City	KS	67846	13.2	57
Stallion	HRW	Nardin	OK	74646	12.5	68
Stallion	HRW	Geneva	NE	68361	14.8	82
Stallion	HRW	Berthoud	CO	80513	13.1	85
Star-Seed-830	HRW	Brown-Co	KS	66434	14.1	62
Stephens	SWW	Wasco-Co	OR	97063	11.1	21
Stephens	SWW	Pomeroy	WA	99347	8.8	22
Stephens	SWW	Coulee-City	WA	99115	12.4	23
Stephens	SWW	Pendleton	OR	97801	9.0	29
Stephens	SWW	Walla-Walla	WA	99362	11.1	33
Stephens	SWW	Pullman	WA	99163	11.3	36
Stephens	SWW	Corvallis	OR	97330	9.7	36
Stephens	SWW	Moro	OR	97039	11.2	40
Stoa	HRS	Langdon	ND	58249	16.3	84
Stoa	HRS	Lamberton	MN	56152	16.2	86
Stoa	HRS	Minot	ND	58701	15.2	86
Stoa	HRS	Stephen	MN	56757	15.0	87
Stoa	HRS	Morris	MN	56267	14.4	87
Stoa	HRS	St-Paul	MN	55101	18.7	89
Stoa	HRS	Frankfort	SD	57440	12.9	91
Stoa	HRS	Bathgate	ND	58216	14.3	94
Stoa	HRS	Fargo	ND	58102	16.0	94
Stoa	HRS	Crookston	MN	56716	16.3	96
Stoa	HRS	Hancock	MN	56244	16.0	98
Stoa	HRS	Dickinson	ND	58601	17.1	98
Stoa	HRS	Williston	ND	58801	18.9	99
Stoa	HRS	Glenfield	ND	58443	17.3	103
Stoa	HRS	Casselton	ND	58012	16.3	103
Tadinia	HRS	Merced	CA	95340	8.1	75
Tadinia	HRS	Sutter-Co	CA	95901	9.9	82
Tadinia	HRS	Davis	CA	95616	12.1	88
Tadinia	HRS	Kern-Co	CA	93301	12.6	91
Tadinia	HRS	Butte-Co	CA	95965	10.1	100
Tam-101	HRW	Nardin	OK	74646	13.0	57
Tam-101	HRW	Geneva	NE	68361	15.2	64
Tam-101	HRW	Berthoud	CO	80513	12.8	71
Tam-101	HRW	Garden-City	KS	67846	14.0	71
Tam-105	HRW	Nardin	OK	74646	12.1	68
Tam-105	HRW	Geneva	NE	68361	11.5	70
Tam-105	HRW	Garden-City	KS	67846	12.7	70
Tam-105	HRW	Berthoud	CO	80513	11.7	84
Tam-107	HRW	Nardin	OK	74646	11.7	68
Tam-107	HRW	Clay-Center	NE	68933	13.3	71
Tam-107	HRW	Reno-Co	KS	67501	13.3	72
Tam-107	HRW	Harvey-Co	KS	67114	14.6	73
Tam-107	HRW	Ellis-Co	KS	67601	13.5	74



TABLE 4. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY VAR.

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
Tam-107	HRW	Brown-Co	KS	66434	12.5	74
Tam-107	HRW	Garden-City	KS	67846	12.2	75
Tam-107	HRW	Franklin-Co	KS	66067	11.7	76
Tam-107	HRW	Mead	NE	68041	15.5	79
Tam-107	HRW	Labette	KS	67350	11.5	79
Tam-107	HRW	Republic-Co	KS	66935	13.9	80
Tam-107	HRW	North-Platte	NE	69101	14.8	81
Tam-107	HRW	Geneva	NE	68361	12.1	82
Tam-107	HRW	Sidney	NE	69162	12.4	83
Tam-107	HRW	Berthoud	CO	80513	12.0	85
Tam-107	HRW	Alliance	NE	69301	13.5	95
Tam-107-Dryland	HRW	Finney-Co	KS	67846	13.8	72
Tam-107-Dryland	HRW	Thomas-Co	KS	67701	11.9	74
Tam-107-Dryland	HRW	Greeley-Co	KS	67879	13.7	82
Tam-107-Irrigated	HRW	Stafford-Co	KS	67576	14.3	52
Tam-107-Irrigated	HRW	Finney-Co	KS	67846	12.5	62
Tam-107-Irrigated	HRW	Greeley-Co	KS	67879	12.4	64
Tam-107-Irrigated	HRW	Thomas-Co	KS	67701	11.7	82
Tam-108	HRW	Reno-Co	KS	67501	13.7	38
Tam-108	HRW	Geneva	NE	68361	10.9	44
Tam-108	HRW	Franklin-Co	KS	66067	11.9	49
Tam-108	HRW	Brown-Co	KS	66434	11.9	53
Tam-108	HRW	Nardin	OK	74646	12.0	54
Tam-108	HRW	Harvey-Co	KS	67114	15.2	54
Tam-108	HRW	Garden-City	KS	67846	12.2	55
Tam-108	HRW	Berthoud	CO	80513	11.6	75
Tam-108-Dryland	HRW	Thomas-Co	KS	67701	11.6	46
Tam-108-Irrigated	HRW	Stafford-Co	KS	67576	14.9	39
Tam-108-Irrigated	HRW	Greeley-Co	KS	67879	12.2	44
Tam-108-Irrigated	HRW	Thomas-Co	KS	67701	11.7	52
Tam-200	HRW	Reno-Co	KS	67501	14.3	44
Tam-200	HRW	Labette	KS	67350	12.1	53
Tam-200	HRW	Sidney	NE	69162	11.5	53
Tam-200	HRW	Harvey-Co	KS	67114	16.2	53
Tam-200	HRW	Woodward	OK	73801	12.6	55
Tam-200	HRW	Clay-Center	NE	68933	14.1	55
Tam-200	HRW	North-Platte	NE	69101	15.2	55
Tam-200	HRW	Stillwater	OK	74074	14.4	56
Tam-200	HRW	Mead	NE	68041	15.5	57
Tam-200	HRW	Republic-Co	KS	66935	14.5	58
Tam-200	HRW	Brown-Co	KS	66434	13.6	59
Tam-200	HRW	Franklin-Co	KS	66067	12.1	59
Tam-200	HRW	Lahoma	OK	73754	13.3	61
Tam-200	HRW	Altus	OK	73521	14.9	62
Tam-200	HRW	Ellis-Co	KS	67601	14.6	68
Tam-200	HRW	Alliance	NE	69301	13.5	69
Tam-200	HRW	Nardin	OK	74646	12.3	75
Tam-200	HRW	Garden-City	KS	67846	13.2	76
Tam-200	HRW	Geneva	NE	68361	12.6	77
Tam-200	HRW	Berthoud	CO	80513	11.7	85
Tam-200-Dryland	HRW	Finney-Co	KS	67846	14.9	50

TABLE 4. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY VAR.

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
Tam-200-Dryland	HRW	Thomas-Co	KS	67701	12.3	58
Tam-200-Dryland	HRW	Greeley-Co	KS	67879	14.0	66
Tam-200-Irrigated	HRW	Stafford-Co	KS	67576	15.2	43
Tam-200-Irrigated	HRW	Greeley-Co	KS	67879	12.7	49
Tam-200-Irrigated	HRW	Finney-Co	KS	67846	13.7	53
Tam-200-Irrigated	HRW	Thomas-Co	KS	67701	11.7	54
Tam-200-Irrigated	HRW	Goodwell	OK	73939	12.8	58
Telemark	HRS	St-Paul	MN	55101	18.0	77
Telemark	HRS	Stephen	MN	56757	16.4	81
Telemark	HRS	Lamberton	MN	56152	16.8	82
Telemark	HRS	Morris	MN	56267	15.4	83
Telemark	HRS	Crookston	MN	56716	16.7	96
Terra-152	SRW	Franklin-Co	KS	66067	11.5	62
Terra-201	SRW	Franklin-Co	KS	66067	11.8	23
Terra-201-Exp	SRW	Labette	KS	67350	12.4	29
Terra-HR150	SRW	Labette	KS	67350	13.7	59
Terra-HR150	SRW	Franklin-Co	KS	66067	12.5	61
Terra-HR151	SRW	Labette	KS	67350	12.5	50
Terra-HR151	SRW	Franklin-Co	KS	66067	11.6	59
Terra-HR152-Exp	SRW	Labette	KS	67350	11.2	61
Terra-SR86	SRW	Franklin-Co	KS	66067	11.6	27
Terra-SR86	SRW	Labette	KS	67350	11.5	31
Terra-SR87	SRW	Labette	KS	67350	11.9	16
Terra-SR87	SRW	Franklin-Co	KS	66067	11.4	23
Thunderbird	HRW	Reno-Co	KS	67501	15.3	64
Thunderbird	HRW	Franklin-Co	KS	66067	13.2	65
Thunderbird	HRW	Rosemount	MN	55068	11.8	67
Thunderbird	HRW	Harvey-Co	KS	67114	16.7	70
Thunderbird	HRW	Morris	MN	56267	16.5	72
Thunderbird	HRW	Brown-Co	KS	66434	14.7	72
Thunderbird	HRW	Berthoud	CO	80513	12.6	74
Thunderbird	HRW	Ellis-Co	KS	67601	15.5	75
Thunderbird	HRW	Republic-Co	KS	66935	15.4	75
Thunderbird	HRW	Garden-City	KS	67846	13.6	77
Thunderbird	HRW	Geneva	NE	68361	14.0	77
Thunderbird	HRW	Labette	KS	67350	13.2	79
Thunderbird	HRW	Nardin	OK	74646	13.5	82
Thunderbird-Dryland	HRW	Thomas-Co	KS	67701	13.3	72
Thunderbird-Dryland	HRW	Greeley-Co	KS	67879	14.4	79
Thunderbird-Dryland	HRW	Finney-Co	KS	67846	16.2	82
Thunderbird-Irrigated	HRW	Greeley-Co	KS	67879	13.1	60
Thunderbird-Irrigated	HRW	Finney-Co	KS	67846	13.6	66
Thunderbird-Irrigated	HRW	Thomas-Co	KS	67701	12.5	76
Trailblazer	HRW	Garden-City	KS	67846	13.8	70
Trailblazer	HRW	Geneva	NE	68361	13.4	75
Trailblazer	HRW	Nardin	OK	74646	12.8	78
Trailblazer	HRW	Berthoud	CO	80513	12.7	90
Tres	Club	Pomeroy	WA	99347	7.9	21
Tres	Club	Pendleton	OR	97801	8.2	24
Tres	Club	Coulee-City	WA	99115	12.4	24
Tres	Club	Corvallis	OR	97330	9.9	31

TABLE 4. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY VAR.

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
Tres	Club	Moro	OR	97039	11.6	32
Tres	Club	Walla-Walla	WA	99362	11.5	33
Tres	Club	Wasco-Co	OR	97063	8.8	33
Tres	Club	Pullman	WA	99163	11.0	39
Triumph	HRW	Franklin-Co	KS	66067	13.8	63
Triumph-64	HRW	Reno-Co	KS	67501	15.1	55
Triumph-64	HRW	Harvey-Co	KS	67114	16.8	60
Triumph-64	HRW	Labette	KS	67350	13.2	60
Triumph-64	HRW	Ellis-Co	KS	67601	16.1	71
Tut-Dryland	HRW	Greeley-Co	KS	67879	14.1	78
Tut-Dryland	HRW	Finney-Co	KS	67846	16.6	79
Twain	SRW	Labette	KS	67350	12.8	25
UC839	HRS	Merced	CA	95340	12.0	63
UC839	HRS	Butte-Co	CA	95965	11.3	74
UC839	HRS	Sutter-Co	CA	95901	10.6	80
UC839	HRS	Davis	CA	95616	12.6	86
UC839	HRS	Kern-Co	CA	93301	13.2	88
UC842	HRS	Merced	CA	95340	11.9	82
UC842	HRS	Butte-Co	CA	95965	12.1	83
UC842	HRS	Sutter-Co	CA	95901	11.3	83
UC842	HRS	Davis	CA	95616	14.0	85
UC842	HRS	Kern-Co	CA	93301	14.1	88
UC849	HWS	Butte-Co	CA	95965	11.2	85
UC849	HWS	Sutter-Co	CA	95901	10.7	87
UC849	HWS	Kern-Co	CA	93301	13.9	98
UC849	HWS	Merced	CA	95340	12.7	99
UC849	HWS	Davis	CA	95616	14.3	102
UC850	Club	Butte-Co	CA	95965	10.6	35
UC850	Club	Sutter-Co	CA	95901	10.1	39
UC850	Club	Merced	CA	95340	9.2	45
UC850	Club	Davis	CA	95616	13.5	50
UC850	Club	Kern-Co	CA	93301	12.8	50
UC851	HWS	Merced	CA	95340	9.2	82
UC851	HWS	Davis	CA	95616	13.6	86
UC851	HWS	Sutter-Co	CA	95901	10.6	88
UC851	HWS	Butte-Co	CA	95965	10.4	92
UC851	HWS	Kern-Co	CA	93301	12.9	105
VC084077		Coulee-City	WA	99115	13.2	14
VC084077		Pullman	WA	99163	10.4	18
VC084077		Pomeroy	WA	99347	10.7	22
VC084077		Walla-Walla	WA	99362	11.8	31
Vance	HRS	Lamberton	MN	56152	16.8	69
Vance	HRS	Langdon	ND	58249	16.0	77
Vance	HRS	Crookston	MN	56716	16.0	80
Vance	HRS	Morris	MN	56267	14.8	80
Vance	HRS	Minot	ND	58701	15.6	81
Vance	HRS	St-Paul	MN	55101	19.3	83
Vance	HRS	Stephen	MN	56757	15.7	90
Vance	HRS	Dickinson	ND	58601	17.4	90
Vance	HRS	Williston	ND	58801	19.6	90
Vance	HRS	Fargo	ND	58102	15.8	95



TABLE 4. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY VAR.

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
Victory	HRW	Brown-Co	KS	66434	12.1	15
Victory	HRW	Reno-Co	KS	67501	15.0	57
Victory	HRW	Harvey-Co	KS	67114	16.6	66
Victory	HRW	Republic-Co	KS	66935	15.1	66
Victory	HRW	Franklin-Co	KS	66067	12.7	68
Victory	HRW	Geneva	NE	68361	13.2	69
Victory	HRW	Nardin	OK	74646	12.8	72
Victory	HRW	Garden-City	KS	67846	12.9	74
Victory	HRW	Ellis-Co	KS	67601	15.5	74
Victory	HRW	Berthoud	CO	80513	13.1	96
Victory-Dryland	HRW	Thomas-Co	KS	67701	13.1	68
Victory-Irrigated	HRW	Finney-Co	KS	67846	13.5	55
Victory-Irrigated	HRW	Greeley-Co	KS	67879	13.0	58
Victory-Irrigated	HRW	Stafford-Co	KS	67576	15.5	61
Victory-Irrigated	HRW	Thomas-Co	KS	67701	12.4	75
Vona	HRW	Mead	NE	68041	15.7	43
Vona	HRW	Clay-Center	NE	68933	15.0	49
Vona	HRW	North-Platte	NE	69101	16.4	53
Vona	HRW	Alliance	NE	69301	11.8	55
Vona	HRW	Sidney	NE	69162	14.1	55
W83-256	HRW	Nardin	OK	74646	12.1	54
W84-279	HRW	Nardin	OK	74646	12.8	75
WA7431		Coulee-City	WA	99115	12.8	19
WA7431		Pomeroy	WA	99347	8.4	24
WA7431		Pullman	WA	99163	10.4	29
WA7431		Walla-Walla	WA	99362	11.2	31
WA7529		Coulee-City	WA	99115	11.2	18
WA7529		Pomeroy	WA	99347	8.4	26
WA7529		Walla-Walla	WA	99362	11.9	31
WA7627		Coulee-City	WA	99115	13.4	24
WA7627		Pomeroy	WA	99347	10.5	36
WA7627		Walla-Walla	WA	99362	12.3	37
Waco	HRW	Nardin	OK	74646	13.5	70
Waco	HRW	Garden-City	KS	67846	14.0	73
Waco	HRW	Geneva	NE	68361	16.1	83
Waco	HRW	Berthoud	CO	80513	12.6	85
Westbred-906R	HRS	Pendleton	OR	97801	15.8	75
Westbred-906R	HRS	Madras	OR	97741	15.0	87
Wheaton	HRS	Lamberton	MN	56152	16.5	78
Wheaton	HRS	Morris	MN	56267	14.7	80
Wheaton	HRS	St-Paul	MN	55101	18.9	83
Wheaton	HRS	Crookston	MN	56716	15.6	83
Wheaton	HRS	Stephen	MN	56757	15.3	89
Yecora-Rojo	HRS	Sutter-Co	CA	95901	10.3	79
Yecora-Rojo	HRS	Merced	CA	95340	9.6	80
Yecora-Rojo	HRS	Butte-Co	CA	95965	10.0	81
Yecora-Rojo	HRS	Davis	CA	95616	14.6	81
Yecora-Rojo	HRS	Kern-Co	CA	93301	14.4	92
Yecora-Rojo-87W	HRW	Butte-Co	CA	95965	11.6	67
Yecora-Rojo-87W	HRW	Sutter-Co	CA	95901	10.2	78
Yecora-Rojo-87W	HRW	Merced	CA	95340	9.2	87

TABLE 4. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY VAR.

VARIETY	CLASS	REGION	STATE	ZIPCODE	PRO.	HRD.
Yecora-Rojo-87W	HRW	Kern-Co	CA	93301	14.2	98
Yecora-Rojo-87W	HRW	Davis	CA	95616	13.5	100
Yolo	HRS	Merced	CA	95340	8.2	78
Yolo	HRS	Sutter-Co	CA	95901	8.7	83
Yolo	HRS	Kern-Co	CA	93301	12.5	91
Yolo	HRS	Butte-Co	CA	95965	10.6	93
Yolo	HRS	Davis	CA	95616	12.0	95

TABLE 5. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY HRD.

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
6	10.5	Basin-Fall	SWW	Tensed	ID	83870
6	9.7	Becker	SRW	Minster	OH	45865
7	11.2	Pioneer-2551	SRW	Marshall	MO	65340
8	9.5	Becker	SRW	West-Unity	OH	43570
10	11.0	Caldwell	SRW	Erie	KS	66733
10	9.6	Dynasty	SRW	Mechanicsburg	OH	43044
10	10.5	Pike	SRW	Lockwood	MO	65682
11	9.5	Dusty	SWW	Grangeville	ID	83530
12	9.4	Becker	SRW	Kingston	OH	45644
12	10.4	Caldwell	SRW	Camden	MI	49232
12	10.0	Cardinal	SRW	Montpelier	OH	43543
12	10.6	Pioneer-2553	SRW	Golden-City	MO	64748
12	9.9	Scotty	SRW	Minster	OH	45865
12	9.5	Tres	Club	Cheney	WA	99004
13	10.5	Becker	SRW	Milford-Center	OH	43045
13	9.7	Caldwell	SRW	Kingston	OH	45644
13	11.5	Daws-Stephens	Mix	Dayton	WA	99328
13	10.3	Hart	SRW	Minster	OH	45865
13	11.5	Hill-81-Edward	Mix	Fairfield	WA	99012
14	11.3	Caldwell	SRW	Erie	KS	66733
14	11.3	Caldwell	SRW	Parsons	KS	67357
14	9.9	Dynasty	SRW	Columbus-Grove	OH	45830
14	12.5	Lewjain	SWW	Wilbur	WA	99185
14	11.3	Pike	SRW	Trenton	MO	64683
14	10.3	Pioneer-2550	SRW	Arcanum	OH	45304
14	9.2	Tres	Club	Plummer	ID	83851
14	10.7	Tres	Club	Wilbur	WA	99185
15	10.3	Becker	SRW	Pleasant-Hill	OH	45359
15	10.6	Bliss-Dirkwin	Mix	Cheney	WA	99004
15	9.6	Caldwell	SRW	Erie	KS	66733
15	9.9	Caldwell	SRW	Marshall	MO	65340
15	14.2	Edwall	SWW	Saint-John	WA	99171
15	11.5	Hill-81	SWW	Dayton	WA	99328
15	10.7	Owens	SWW	Tensed	ID	83870
15	11.9	Stephens	SWW	Dayton	WA	99328
16	9.4	Augusta	SWW	Ceresco	MI	49033
16	9.2	Becker	SRW	Columbus-Grove	OH	45830
16	10.8	Caldwell	SRW	Golden-City	MO	64748
16	10.4	Caldwell	SRW	Montpelier	OH	43543
16	10.6	Caldwell	SRW	Montpelier	OH	43543
16	10.0	Cardinal	SRW	Sweet-Springs	MO	65351
16	10.2	Cardinal	SRW	Pioneer	OH	43554
16	10.3	Edwall	SWW	Worley	ID	83876
16	9.0	Edwall	SWW	Bickleton	WA	99322
16	11.1	FS402/GR876	Mix	Mt-Vernon	OH	43050
16	11.0	Hill-81	SWW	Cataldo	ID	83810
16	10.9	Sprague-Johns	Mix	Waterville	WA	98858
16	11.2	Titan	SRW	Utica	OH	43080
17	11.4	Caldwell	SRW	Camden	MI	49232
17	12.3	Caldwell	SRW	Jefferson-City	MO	65102
17	10.3	Hill-81	SWW	Pomeroy	WA	99347



TABLE 5. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY HRD.

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
17	13.6	Owens	SWW	Dayton	WA	99328
17	13.0	Penawawa	SWW	Bickleton	WA	99322
18	10.2	Caldwell	SRW	Camden	MI	49232
18	11.8	Caldwell	SRW	Camden	MI	49232
18	10.2	Caldwell	SRW	Trenton	MO	64683
18	11.3	Caldwell/Cardinal	Mix	Mt-Vernon	OH	43050
18	11.0	Cardinal	SRW	Marshall	MO	65340
18	9.3	Frankenmuth	SWW	Carson-City	MI	48811
18	11.3	Hill-81	SWW	Colfax	WA	99111
18	10.2	Hillsdale	SRW	Kingston	OH	45644
18	13.0	Lewjain	SWW	Coulee-City	WA	99115
18	11.9	Merchman-Kate		Galt	MO	64641
18	13.3	Owens	SWW	Dayton	WA	99328
18	11.6	Penawawa	SWW	Fairfield	WA	99012
18	10.9	Pioneer-2551	SRW	Houstonia	MO	65333
18	10.5	Stephens	SWW	Nezperce	ID	83543
18	10.5	Stephens	SWW	Nezperce	ID	83543
19	10.5	Augusta	SWW	Gilford	MI	48736
19	9.8	Cardinal	SRW	Pleasant-Hill	OH	45359
19	10.7	Cashup	SWW	Palouse	WA	99161
19	10.8	Daws	SWW	Cheney	WA	99004
19	12.1	Dusty	SWW	Dayton	WA	99328
19	10.4	Edwall	SWW	Worley	ID	83876
19	13.5	Edwall	SWW	Hartline	WA	99135
19	14.3	Edwall	SWW	Sprague	WA	99032
19	10.9	Frankenmuth	SWW	Alma	MI	48801
19	11.3	Hill-81	SWW	Dayton	WA	99328
19	9.7	Hyslop	SWW	Craigmont	ID	83523
19	10.1	Lewjain	SWW	Bickleton	WA	99322
19	9.6	Lewjain	SWW	Wilbur	WA	99185
19	11.3	Penawawa	SWW	Rexburg	ID	83440
19	12.8	Penawawa	SWW	Rosalia	WA	99170
19	10.2	Tres	Club	Wilbur	WA	99185
20	10.8	Becker	SRW	Dola	OH	45835
20	11.1	Cardinal	SRW	Petersburg	OH	44454
20	11.8	Dusty	SWW	Pomeroy	WA	99347
20	10.0	Edwall	SWW	Worley	ID	83876
20	11.0	Frankenmuth	SWW	Sunfield	MI	48890
20	12.3	Hill-81	SWW	Dayton	WA	99328
20	12.1	Lewjain	SWW	Ritzville	WA	99169
20	11.9	Lewjain	SWW	Wilbur	WA	99185
20	12.1	Pioneer-2251		Jefferson-City	MO	65102
20	13.9	Pioneer-2555	SRW	Bethany	MO	64424
20	10.9	Sprague	SWW	Mansfield	WA	98830
20	11.2	Stephens	SWW	Genesee	ID	83832
21	11.0	Cashup	SWW	Pomeroy	WA	99347
21	10.2	Frankenmuth	SWW	Lyons	MI	48851
21	10.5	Hillsdale	SRW	West-Unity	OH	43570
21	8.5	Lewjain	SWW	Nezperce	ID	83543
21	12.3	Lewjain	SWW	Almira	WA	99103
21	11.4	Lewjain	SWW	Pomeroy	WA	99347

TABLE 5. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY HRD.

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
21	14.1	Owens	SWW	Hartline	WA	99135
21	11.1	Sprague	SWW	Waterville	WA	98858
21	11.4	Stephens	SWW	Mountain-Home	ID	83647
21	11.3	Stephens	SWW	Ashland	MS	38603
21	10.5	Tres	Club	Almira	WA	99103
21	9.1	Tres	Club	Bickleton	WA	99322
21	10.5	Tyler	SRW	Canfield	OH	44406
21	11.7	Waverly-Hill-81	Mix	Worley	ID	83876
22	10.2	Augusta	SWW	Gilford	MI	48736
22	11.0	Caldwell	SRW	Drayton-Plains	MI	44820
22	11.1	Caldwell	SRW	Ludlow-Falls	OH	45359
22	10.5	Cardinal	SRW	Columbiana	OH	44408
22	10.1	Cardinal	SRW	Glandorf	OH	45848
22	11.3	Cashup	SWW	Colfax	WA	99111
22	12.7	Fielder	SWW	Dayton	WA	99328
22	13.7	Fieldwin	SWW	Dayton	WA	99328
22	11.3	Frankenmuth	SWW	Sunfield	MI	48890
22	10.9	Hill-81	SWW	Pomeroy	WA	99347
22	10.0	Lewjain	SWW	Wilbur	WA	99185
22	12.4	Lewjain-Edwall	Mix	Sprague	WA	99032
22	11.3	Moro	Club	Kahlotus	WA	99335
22	11.9	Penawawa-Lewjain	Mix	Fairfield	WA	99012
22	13.4	Pioneer-2551	SWW	Erie	KS	66733
22	10.7	Sprague	SWW	Mansfield	WA	98830
22	10.9	Sprague	SWW	Waterville	WA	98858
22	11.8	Sprague	SWW	Waterville	WA	98858
22	10.2	Sprague-Daws	Mix	Coulee-City	WA	99115
22	13.9	Stephens	SWW	Nezperce	ID	83543
22	10.5	Tyler	SRW	North-Lima	OH	44452
23	10.3	Augusta	SWW	Elwell	MI	48832
23	10.7	Augusta	SWW	St-Louis	MI	48880
23	9.7	Becker	SRW	Mechanicsburg	OH	43044
23	12.1	Caldwell	SRW	Jefferson-City	MO	65102
23	10.9	Caldwell	SRW	Lockwood	MO	65682
23	9.7	Caldwell	SRW	Milford-Center	OH	43045
23	11.5	Caldwell	SRW	Minster	OH	45865
23	11.5	Cardinal	SRW	Butler	PA	16001
23	9.6	Daws	SWW	Coulee-City	WA	99115
23	10.8	Daws	SWW	Coulee-City	WA	99115
23	11.1	Frankenmuth	SWW	Grand-Ledge	MI	48837
23	11.8	Hill-81	SWW	Benton-City	WA	99320
23	11.6	Hill-81	SWW	Cheney	WA	99004
23	10.1	Horns-20		Crestline	OH	44827
23	10.8	Leaded		Drayton-Plains	MI	44820
23	8.8	Lewjain	SWW	Nezperce	ID	83543
23	12.2	Lewjain	SWW	Nezperce	ID	83543
23	10.2	Lewjain	SWW	Wilbur	WA	99185
23	10.0	Moro	Club	Ritzville	WA	99169
23	10.2	Moro	Club	Ritzville	WA	99169
23	12.3	Owens	SWW	Colfax	WA	99111
23	13.0	Owens	SWW	Lacrosse	WA	99143

TABLE 5. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY HRD.

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
23	12.5	Owens-Tres	Mix	Ritzville	WA	99169
23	9.9	Pioneer-2555	SRW	Houstonia	MO	65333
23	11.0	Sprague	SWW	Waterville	WA	98858
23	9.9	Stephens	SWW	Lenore	ID	83541
23	10.4	Stephens-Hill	Mix	Dayton	WA	99328
23	10.7	Tres	Club	Bickleton	WA	99322
23	12.9	Tyler	SRW	Leipsic	OH	45856
24	10.1	Augusta	SWW	Battle-Creek	MI	49017
24	12.3	Caldwell	SRW	Jefferson-City	MO	65102
24	10.3	Caldwell	SRW	Pleasant-Hill	OH	45359
24	11.3	Daws	SWW	Prescott	WA	99348
24	11.5	Daws	SWW	Prescott	WA	99348
24	12.5	Daws	SWW	Prescott	WA	99348
24	10.5	Frankenmuth	SWW	Alma	MI	48801
24	10.6	Hill-81	SWW	Tensed	ID	83870
24	11.8	Hill-81	SWW	Pomeroy	WA	99347
24	11.6	Lewjain	SWW	Almira	WA	99103
24	10.0	Moro	Club	Ritzville	WA	99169
24	10.9	Sprague	SWW	Mansfield	WA	98830
24	11.7	Sprague	SWW	Waterville	WA	98858
24	10.3	Sprague-Daws	Mix	Coulee-City	WA	99115
24	10.4	Sprague-Daws	Mix	Hartline	WA	99135
24	9.5	Stephens	SWW	Greencreek	ID	83533
24	11.4	Stephens	SWW	Dayton	WA	99328
24	12.1	Stephens	SWW	Pomeroy	WA	99347
24	10.2	Tyler	SRW	Youngstown	OH	44514
25	10.9	Augusta	SWW	Battle-Creek	MI	49017
25	11.1	Augusta	SWW	Battle-Creek	MI	49017
25	10.5	Augusta	SWW	Gilford	MI	48736
25	11.1	Augusta	SWW	Portland	MI	48875
25	10.5	Barbee	Club	Bickleton	WA	99322
25	10.9	Bliss	SWW	Rexburg	ID	83440
25	11.5	Caldwell	SRW	Jefferson-City	MO	65102
25	11.5	Caldwell	SRW	Leipsic	OH	45856
25	10.1	Caldwell	SRW	Mechanicsburg	OH	43044
25	10.1	Cardinal	SRW	Minster	OH	45865
25	10.3	Dusty-Stephens	Mix	Grangeville	ID	83530
25	10.3	Frankenmuth	SWW	Alma	MI	48801
25	10.5	Frankenmuth	SWW	Alma	MI	48801
25	10.7	Frankenmuth	SWW	Shepherd	MI	48883
25	9.7	Lewjain	SWW	Lenore	ID	83541
25	10.4	Lewjain	SWW	Coulee-City	WA	99115
25	10.1	Sprague-Daws	Mix	Coulee-City	WA	99115
25	11.8	Stephens	SWW	Filer	ID	83328
25	11.2	Stephens	SWW	Genesee	ID	83832
25	11.2	Stephens	SWW	Mountain-Home	ID	83647
25	14.2	Tres	Club	Dayton	WA	99328
25	9.8	Tres	Club	Wilbur	WA	99185
25	10.6	Tres	Club	Wilbur	WA	99185
25	11.4	Tres	Club	Wilbur	WA	99185
25	11.1	Tres-Crew	Mix	Hartline	WA	99135



TABLE 5. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY HRD.

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
25	11.8	Tyler	SRW	Salem	OH	44460
26	9.8	Caldwell	SRW	Golden-City	MO	64748
26	11.3	Caldwell	SRW	Jefferson-City	MO	65102
26	10.4	Caldwell	SRW	Marshall	MO	65340
26	10.5	Cardinal	SRW	St-Louis	MO	43140
26	10.0	Cardinal	SRW	Minster	OH	45865
26	9.2	Daws	SWW	Coulee-City	WA	99115
26	12.0	Daws-Stephens	Mix	Prescott	WA	99348
26	11.5	Dynasty	SRW	Glandorf	OH	45848
26	11.6	Dynasty	SRW	Glandorf	OH	45848
26	9.9	Edwall	SWW	Culdesac	ID	83524
26	11.6	Edwall	SWW	Pomeroy	WA	99347
26	12.0	Edwall	SWW	Pomeroy	WA	99347
26	11.7	Frankenmuth	SWW	Eagle	MI	48822
26	11.0	Frankenmuth	SWW	Grand-Ledge	MI	48837
26	11.8	Hill-81	SWW	Dayton	WA	99328
26	10.0	Lewjain	SWW	Wilbur	WA	99185
26	10.6	Stephens	SWW	Genesee	ID	83832
26	11.7	Stephens	SWW	Genesee	ID	83832
26	11.9	Stephens	SWW	Genesee	ID	83832
26	11.2	Stephens	SWW	Power-Co	ID	83211
26	12.3	Stephens	SWW	Pomeroy	WA	99347
26	10.8	Stephens	SWW	Saint-John	WA	99171
26	10.8	Tres	Club	Hartline	WA	99135
26	10.6	Tres	Club	Pomeroy	WA	99347
26	10.5	Tres	Club	Ritzville	WA	99169
26	11.2	Tres	Club	Wilbur	WA	99185
26	11.7	Tres	Club	Wilbur	WA	99185
27	9.8	Augusta	SWW	Gilford	MI	48736
27	11.2	Caldwell	SRW	Lockwood	MO	65682
27	11.4	Caldwell	SRW	Harrod	OH	45850
27	10.7	Daws	SWW	Walla-Walla	WA	99362
27	12.0	Frankenmuth	SWW	Grand-Ledge	MI	48837
27	10.8	Hill-81	SWW	Nezperce	ID	83543
27	10.3	Hill-81	SWW	Amity	OR	97101
27	13.4	Lewjain-Edwall	Mix	Granger	WA	98932
27	10.7	Stephens	SWW	Craigmont	ID	83523
27	10.4	Stephens	SWW	Meridian	ID	83642
27	10.9	Stephens	SWW	Nezperce	ID	83543
27	12.0	Stephens	SWW	Prescott	WA	99348
28	13.4	Caldwell	SRW	Jefferson-City	MO	65102
28	10.1	Caldwell	SRW	Ottawa	OH	45875
28	10.6	Cardinal	SRW	Coulee-City	WA	99115
28	11.3	Crew-Tres	Mix	Hartline	WA	99135
28	11.9	Edwall	SWW	Fairfield	WA	99012
28	11.9	Sprague	SWW	Waterville	WA	98858
28	11.4	Stephens	SWW	Genesee	ID	83832
28	11.2	Stephens	SWW	Nezperce	ID	83543
28	11.6	Stephens	SWW	Pullman	WA	99163
28	12.8	Tres	Club	Prescott	WA	99348
29	11.5	Augusta	SWW	Sunfield	MI	48890

**TABLE 5. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY HRD.**

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
29	11.1	Becker	SRW	Ottawa	OH	45875
29	11.3	Caldwell	SRW	Golden-City	MO	64748
29	9.7	Crew	Club	Grass-Valley	OR	97029
29	10.9	Dynasty	SRW	Columbus-Grove	OH	45830
29	10.6	Frankenmuth	SWW	Alma	MI	48801
29	12.0	Frankenmuth	SWW	Grand-Ledge	MI	48837
29	10.9	Stephens	SWW	Culdesac	ID	83524
29	11.2	Stephens	SWW	Genesee	ID	83832
29	11.2	Stephens	SWW	Genesee	ID	83832
29	12.3	Stephens	SWW	Prescott	WA	99348
29	11.3	Titan	SRW	Mechanicsburg	OH	43044
29	11.2	Titan	SRW	Minster	OH	45865
29	11.2	Tres	Club	Walla-Walla	WA	99362
29	10.0	Tres	Club	Wilbur	WA	99185
29	11.8	Tres	Club	Wilbur	WA	99185
29	13.1	Tres	Club	Wilbur	WA	99185
29	10.7	Tyler	SRW	Dunkirk	OH	45836
30	11.6	Augusta	SWW	Charlotte	MI	48813
30	11.6	Augusta	SWW	Gilford	MI	48736
30	12.4	Caldwell	SRW	Bethany	MO	64424
30	12.7	Caldwell	SRW	Jefferson-City	MO	65102
30	11.3	Caldwell	SRW	Lockwood	MO	65682
30	10.4	Cardinal	SRW	Pleasant-Hill	OH	45359
30	11.9	Chisholm	HRW	Woodward	OK	73802
30	12.3	Hill-81	SWW	Worley	ID	83876
30	11.3	Hill-81	SWW	Rosalia	WA	99170
30	12.1	Madsen	SWW	Prescott	WA	99348
30	11.2	Stephens	SWW	Genesee	ID	83832
30	11.7	Tres	Club	Wilson-Creek	WA	98860
30	11.0	Tres-Crew	Mix	Hartline	WA	99135
30	10.0	Waverly	SWW	Ferdinand	ID	83526
31	10.4	Augusta	SWW	Gilford	MI	48736
31	10.4	Becker	SRW	Plain-City	OH	43064
31	14.1	Caldwell	SRW	Jefferson-City	MO	65102
31	9.1	Daws	SWW	Grangeville	ID	83530
31	10.6	Hill	SWW	Craigmont	ID	83523
31	10.0	Hill-81	SWW	Grangeville	ID	83530
31	13.3	Pioneer-2555	SRW	Marshall	MO	65340
31	11.9	Stephens	SWW	Askew	MS	38604
31	10.6	Stephens	SWW	Amity	OR	97101
31	10.4	Stephens	SWW	Donald	OR	97020
31	10.5	Stephens	SWW	Maupin	OR	97037
32	10.3	Frankenmuth	SWW	Gilford	MI	48736
32	12.7	Frankenmuth	SWW	Grand-Ledge	MI	48837
32	11.4	Hill	SWW	Genesee	ID	83832
32	11.6	Lewjain	SWW	Edwall	WA	99008
32	9.9	Newton	HRW	Erie	KS	66733
32	11.9	Stephens	SWW	Craigmont	ID	83523
32	10.8	Stephens	SWW	Culdesac	ID	83524
32	10.9	Stephens	SWW	Mountain-Home	ID	83647
32	11.3	Stephens	SWW	Arkabutla	MS	38602

TABLE 5. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY HRD.

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
32	14.8	Waverly	SWW	Kahlotus	WA	99335
33	11.5	Augusta	SWW	Gilford	MI	48736
33	11.9	Caldwell	SRW	Old-Monroe	MO	63369
33	10.8	Hill-81	SWW	Wilsonville	OR	97020
33	10.4	Pioneer-2157	HRW	Chickasha	OK	73018
33	10.6	Stephens	SWW	Amity	OR	97101
33	10.5	Tres	Club	Grangeville	ID	83530
33	11.3	Tres-Crew	Mix	Hartline	WA	99135
34	10.7	Augusta	SWW	Gilford	MI	48736
34	11.2	Cardinal	SRW	Marshall	MO	65340
34	12.2	Stephens	SWW	Colfax	WA	99111
35	12.4	Daws	SWW	Prescott	WA	99348
35	10.0	Daws	SWW	Saint-John	WA	99171
35	9.8	Hill-81	SWW	Grangeville	ID	83530
35	10.5	Hill-81	SWW	Nezperce	ID	83543
35	12.1	Stephens	SWW	Quincy	WA	98848
35	11.9	Tres	Club	Walla-Walla	WA	99362
36	11.4	Chisholm	HRW	Medford	OK	73759
37	10.3	Lewjain	SWW	Coulee-City	WA	99115
37	10.1	Stephens	SWW	Grass-Valley	OR	97029
37	13.1	Stephens	SWW	Prescott	WA	99348
37	10.8	Tres	Club	Grass-Valley	OR	97029
38	11.2	Chisholm	HRW	Afton	OK	74331
38	11.0	Pioneer-2157	HRW	Stillwater	OK	74076
38	12.2	Tam-108	HRW	Satanta	KS	67870
39	11.4	Augusta	SWW	Gilford	MI	48736
39	11.6	Frankenmuth	SWW	Eagle	MI	48822
39	10.8	Stephens	SWW	Craigmont	ID	83523
40	13.9	Chisholm	HRW	Woodward	OK	73802
40	10.2	Tam-108	HRW	Gilman-City	MO	64642
41	12.6	Arkan	HRW	Attica	KS	67009
41	12.1	Arkan	HRW	Erie	KS	66733
41	10.6	Chisholm	HRW	Chickasha	OK	73018
41	12.2	Chisholm	HRW	Kingfisher	OK	73750
41	13.2	Chisholm	HRW	Medford	OK	73759
41	10.3	Chisholm	HRW	Woodward	OK	73802
41	10.4	Pony	HRW	Chickasha	OK	73018
42	12.6	Arkan	HRW	Attica	KS	67009
42	10.4	Chisholm	HRW	Bison	OK	73720
42	10.8	Chisholm	HRW	Chickasha	OK	73018
43	12.3	Chilsolm	HRW	Tonkawa	OK	74653
44	10.8	Chisholm	HRW	Chickasha	OK	73018
44	11.6	Chisholm	HRW	Chickasha	OK	73018
44	10.8	Chisholm	HRW	Medford	OK	73759
44	10.6	Mesa	HRW	Burden	KS	67019
45	13.0	Arkan	HRW	Erie	KS	66733
45	11.3	Chisholm	HRW	Chickasha	OK	73018
45	11.6	Shawnee-Arkan	Mix	Topeka	KS	66618
45	13.5	Triumph-64	HRW	Winfield	KS	67156
45	12.0	Victory	HRW	Topeka	KS	66617
46	11.8	Arkan	HRW	Burden	KS	67019



**TABLE 5. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY HRD.**

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
46	12.5	Chisholm	HRW	Weatherford	OK	73096
46	11.8	Tam-108	HRW	Afton	OK	74331
46	13.4	Triumph	HRW	Stillwater	OK	74076
47	11.2	Chisholm	HRW	Weatherford	OK	73096
47	13.9	Chisholm	HRW	Woodward	OK	73802
47	13.8	Pioneer-2157	HRW	Winfield	KS	67156
47	10.6	Pioneer-2157	HRW	Stillwater	OK	74076
48	13.4	Chisholm	HRW	Hardtner	KS	67057
48	9.9	Chisholm	HRW	Bison	OK	73720
48	10.8	Chisholm	HRW	Weatherford	OK	73096
48	12.5	Pioneer-2157	HRW	Tonkawa	OK	74653
49	13.8	Arkan	HRW	Winfield	KS	67156
49	11.5	Chisholm	HRW	Bison	OK	73720
49	14.2	Chisholm	HRW	Frederick	OK	73542
49	12.2	Chisholm	HRW	Kingfisher	OK	73750
49	12.5	Chisholm	HRW	Weatherford	OK	73096
49	13.3	Mesa	HRW	Burden	KS	67019
50	14.4	Arkan	HRW	Winfield	KS	67156
50	12.0	Chisholm	HRW	Bison	OK	73720
50	13.5	Chisholm	HRW	Frederick	OK	73542
50	12.3	Chisholm	HRW	Kingfisher	OK	73750
50	11.4	Chisholm	HRW	Tonkawa	OK	74653
50	12.7	Chisholm	HRW	Weatherford	OK	73096
50	13.6	Colt	HRW	McCook	NE	69001
50	11.4	Hawk	HRW	Leoti	KS	67861
51	13.1	Arkan	HRW	Atlanta	KS	67008
51	12.2	Chisholm	HRW	Kingfisher	OK	73750
51	12.0	Chisholm	HRW	Tonkawa	OK	74653
51	12.2	Klasic	HWW	Merced	CA	95340
51	13.0	Klasic	HWW	Stockton	CA	95207
51	10.7	Victory	HRW	Burden	KS	67019
52	11.1	Chisholm	HRW	Afton	OK	74331
52	11.6	Chisholm	HRW	Frederick	OK	73542
52	12.0	Chisholm	HRW	Woodward	OK	73802
52	14.3	Colt	HRW	Hemingford	NE	69348
52	13.0	Guard	HRS	Watertown	SD	57201
52	13.1	Guard	HRS	Watertown	SD	57201
52	10.7	Pioneer-2157	HRW	Chickasha	OK	73018
52	15.8	Pioneer-2157	HRW	Woodward	OK	73802
52	11.9	Stallion	HRW	Winfield	KS	67156
52	13.1	Tam-101	HRW	Weatherford	OK	73096
52	14.0	Triumph	HRW	Stillwater	OK	74076
52	15.0	Victory	HRW	Burlingame	KS	66413
53	12.3	Century	HRW	Winfield	KS	67156
53	14.3	Chisholm	HRW	Frederick	OK	73542
53	12.2	Chisholm	HRW	Kingfisher	OK	73750
53	13.1	Larned	HRW	Colby	KS	67701
53	9.8	Tam-101	HRW	Afton	OK	74331
54	12.3	Chisholm	HRW	Bison	OK	73720
54	13.2	Newton	HRW	Clay-Center	KS	67432
54	12.7	Pioneer-2157	HRW	Winfield	KS	67156

TABLE 5. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY HRD.

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
54	13.8	Pioneer-2157	HRW	Bison	OK	73720
54	14.4	Pioneer-2157	HRW	Woodward	OK	73802
54	11.4	Pioneer-2167	HRW	Stillwater	OK	74076
54	13.3	Triumph	HRW	Stillwater	OK	74076
54	12.9	Victory	HRW	Winfield	KS	67156
54	12.1	Vona	HRW	Chickasha	OK	73018
55	14.5	Arkan	HRW	Atlanta	KS	67008
55	15.5	Arkan	HRW	Burlingame	KS	66413
55	11.9	Newton	HRW	Leoti	KS	67861
55	14.2	Tam-101	HRW	Weatherford	OK	73096
55	10.3	Tam-107	HRW	Erie	KS	66733
55	16.8	Tiber	HRW	Townsend	MT	59644
55	12.6	Triumph	HRW	Stillwater	OK	74076
55	13.4	Weston	HRW	Billings	MT	59101
56	12.0	Chisholm	HRW	Afton	OK	74331
56	13.3	Mesa	HRW	Medford	OK	73759
56	14.1	Neeley	HRW	Townsend	MT	59644
56	16.9	Pioneer-2157	HRW	Woodward	OK	73802
56	12.2	Redland	HRW	Chappell	NE	69129
56	15.3	Redland	HRW	Hay-Springs	NE	69347
56	13.8	Redskin	HRW	Townsend	MT	59644
56	13.5	Stallion	HRW	Kingfisher	OK	73750
56	13.8	Stallion	HRW	Kingfisher	OK	73750
56	14.1	Tam-101	HRW	Weatherford	OK	73096
56	11.9	Triumph	HRW	Chickasha	OK	73018
57	13.0	Newton	HRW	Johnson	KS	67855
57	14.3	Redland	HRW	Grant	NE	69140
57	14.4	Stallion	HRW	Tonkawa	OK	74653
57	14.0	Tam-101	HRW	Weatherford	OK	73096
57	13.2	Tam-107	HRW	Topeka	KS	67861
57	14.3	Victory	HRW	McCook	NE	69001
58	11.3	Anza	HRW	Stockton	CA	95201
58	12.5	Guard	HRS	Watertown	SD	57201
58	11.3	Norstar	HRW	Havre	MT	59501
58	13.2	Pioneer-2157	HRW	Medford	OK	73759
58	14.9	Plainsman	HRW	Winfield	KS	67156
58	13.5	Redland	HRW	Hemingford	NE	69348
58	13.3	Tam-108	HRW	Bison	OK	73720
58	13.2	Tam-200	HRW	Grant	NE	69140
58	13.0	Victory	HRW	Harveyville	KS	66431
59	12.5	Abilene	HRW	Edison	NE	68936
59	11.9	Chisholm	HRW	Frederick	OK	73542
59	11.6	Mesa	HRW	Afton	OK	74331
59	13.3	Newton	HRW	Colby	KS	67701
59	13.5	Newton	HRW	Johnson	KS	67855
59	15.1	Pioneer-2157	HRW	Hays	KS	67601
59	11.2	Pioneer-2167	HRW	Stillwater	OK	74076
59	14.7	Thunderbird	HRW	Ogallala	NE	69153
59	14.8	Weston	HRW	Edgar	MT	59026
60	16.0	Arkan	HRW	Clay-Center	KS	67432
60	10.8	Hawk	HRW	Satanta	KS	67870

TABLE 5. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY HRD.

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
60	15.2	Olso	HRS	Crookston	MN	56716
60	13.4	Pioneer-2157	HRW	Tonkawa	OK	74653
60	12.4	Stallion	HRW	Kingfisher	OK	73750
61	11.8	Pioneer-2157	HRW	Chickasha	OK	73018
61	12.6	Pioneer-2157	HRW	Kingfisher	OK	73750
61	13.8	Pioneer-2157	HRW	Kingfisher	OK	73750
61	13.7	Pioneer-2157	HRW	Medford	OK	73759
61	14.6	Pioneer-2157	HRW	Medford	OK	73759
61	11.3	Pioneer-2157	HRW	Tonkawa	OK	74653
61	11.6	Pioneer-2157	HRW	Tonkawa	OK	74653
61	14.7	Thunderbird	HRW	Kimball	NE	69145
61	13.6	Thunderbird	HRW	Medford	OK	73759
62	13.9	Abilene	HRW	Burlingame	KS	66413
62	12.7	Arkan	HRW	Delia	KS	66418
62	14.9	Arkan	HRW	Pauline	KS	66619
62	13.7	Brule	HRW	Hemingford	NE	69348
62	11.3	Cargill-Bounty	Mix	O'Fallon	MO	63366
62	10.2	Mesa	HRW	Bison	OK	73720
62	11.8	Neeley	HRW	Havre	MT	59501
62	13.6	Pioneer-2157	HRW	Bison	OK	73720
62	12.2	Pioneer-2157	HRW	Chickasha	OK	73018
62	14.6	Pioneer-2157	HRW	Medford	OK	73759
62	12.0	Pioneer-2157	HRW	Stillwater	OK	74076
62	12.8	Pioneer-2157	HRW	Weatherford	OK	73096
62	11.7	Redland	HRW	Chappell	NE	69129
62	12.1	Siouxland	HRW	Kimball	NE	69145
62	12.4	TFS-7846		White-Cloud	KS	66094
63	13.8	Abilene	HRW	Satanta	KS	67870
63	11.4	Beordless		Hardtner	KS	67057
63	12.6	Brule	HRW	Chappell	NE	69129
63	12.3	Buckskin	HRW	Kimball	NE	69145
63	12.3	Pioneer-2157	HRW	Stillwater	OK	74076
63	12.8	Pioneer-2157	HRW	Weatherford	OK	73096
63	13.1	Pioneer-2157	HRW	Weatherford	OK	73096
63	12.3	Stallion	HRW	Kingfisher	OK	73750
64	12.4	Mesa	HRW	Medford	OK	73759
64	13.2	Pioneer-2157	HRW	Tonkawa	OK	74653
64	12.2	Redland	HRW	Chappell	NE	69129
64	14.4	Siouxland	HRW	McCook	NE	69001
64	11.8	Stallion	HRW	Tonkawa	OK	74653
64	12.9	Tam-101	HRW	Chickasha	OK	73018
64	14.5	Tam-101	HRW	Weatherford	OK	73096
64	14.4	Thunderbird	HRW	Osage-City	KS	66523
64	13.5	Thunderbird	HRW	Winfield	KS	67156
64	12.7	Victory	HRW	Satanta	KS	67870
64	13.6	White-130		Sacramento	CA	95835
65	15.6	Arapahoe	HRW	Hay-Springs	NE	69347
65	13.3	Chisholm	HRW	Medford	OK	73759
65	11.2	Eagle	HRW	Colby	KS	67701
65	12.4	Guard	HRS	Watertown	SD	57201
65	12.9	Norkan	HRW	Hiawatha	KS	66434



TABLE 5. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY HRD.

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
65	13.7	Pioneer-2157	HRW	Frederick	OK	73542
65	13.0	Pioneer-2157	HRW	Weatherford	OK	73096
65	12.3	Redland	HRW	Venango	NE	69168
65	14.8	Stallion	HRW	Kingfisher	OK	73750
65	13.6	Tam-107	HRW	Venango	NE	69168
66	13.2	Neeley	HRW	Havre	MT	59501
66	11.8	Neeley	HRW	Laurel	MT	59044
66	12.3	Newton	HRW	Reserve	KS	66529
66	11.1	Pioneer-2127		Stillwater	OK	74076
66	11.1	Pioneer-2157	HRW	Bison	OK	73720
66	13.9	Tam-101	HRW	Bison	OK	73720
66	14.2	Victory	HRW	Osage-City	KS	66523
67	12.8	Arapahoe	HRW	Grant	NE	69140
67	15.7	Arkan	HRW	Harveyville	KS	66431
67	12.1	Larned	HRW	Colby	KS	67701
67	12.7	Siouxland	HRW	Chappell	NE	69129
67	14.4	Siouxland	HRW	Hemingford	NE	69348
67	13.5	Trailblazer	HRW	Hardtner	KS	67057
67	13.4	Triumph	HRW	Medford	OK	73759
67	15.0	Victory	HRW	Hay-Springs	NE	69347
67	14.8	Victory	HRW	Kimball	NE	69145
67	10.2	Yolo	HRW	Williams	CA	95987
68	15.4	Arkan	HRW	Clay-Center	KS	67432
68	14.1	Centura	HRW	Venango	NE	69168
68	10.8	Chisholm	HRW	Afton	OK	74331
68	12.3	Klasic	HWW	Williams	CA	95987
68	13.0	Pioneer-2127		Stillwater	OK	74076
68	11.3	Pioneer-2157	HRW	Afton	OK	74331
68	12.3	Pioneer-2157	HRW	Chickasha	OK	73018
68	13.6	Pioneer-2157	HRW	Medford	OK	73759
68	12.5	Stallion	HRW	Kingfisher	OK	73750
68	15.6	Thunderbird	HRW	Osage-City	KS	66523
68	15.3	Thunderbird	HRW	Grant	NE	69140
68	13.6	Thunderbird	HRW	Kimball	NE	69145
68	15.3	Victory	HRW	Clay-Center	KS	67432
68	14.6	Victory	HRW	Grant	NE	69140
69	16.0	Buckskin	HRW	Hemingford	NE	69348
69	11.4	Centurk	HRW	Grant	NE	69140
69	15.8	Hawk	HRW	Satanta	KS	67870
69	9.8	Larned	HRW	Hays	KS	67601
69	13.1	Mesa	HRW	Colby	KS	67701
69	13.1	Pioneer-2157	HRW	Bison	OK	73720
69	12.4	Tam-105	HRW	Venango	NE	69168
70	14.6	Brule	HRW	Grant	NE	69140
70	15.9	Cody	HRW	Hay-Springs	NE	69347
70	14.8	Cody	HRW	McCook	NE	69001
70	13.4	Hawk	HRW	Rapelie	MT	59067
70	10.9	Neeley	HRW	Rapelie	MT	59067
70	14.1	Newton	HRW	Hays	KS	67601
70	14.5	Norstar	HRW	Havre	MT	59501
70	11.2	Pioneer-2157	HRW	Afton	OK	74331

TABLE 5. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY HRD.

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
70	12.8	Pioneer-2157	HRW	Stillwater	OK	74076
70	14.1	Pioneer-2157	HRW	Weatherford	OK	73096
70	15.9	Thunderbird	HRW	Hay-Springs	NE	69347
70	15.7	Trailblazer	HRW	McCook	NE	69001
70	15.8	Victory	HRW	Clay-Center	KS	67432
70	14.1	Wheaton	HRS	Elbow-Lake	MN	56531
70	15.5	Yecora-Rojo	HRW	Bakersfield	CA	93389
70	12.2	Yecora-Rojo	HRW	Goshen	CA	93227
70	13.5	Yecora-Rojo	HRW	Goshen	CA	93227
71	11.4	Agassiz	HRW	Bainville	MT	59212
71	12.9	Centura	HRW	Venango	NE	69168
71	12.7	Guard	HRS	Watertown	SD	57201
71	13.7	Marshall	HRS	Foxhome	MN	56543
71	10.6	Pioneer-2157	HRW	Afton	OK	74331
71	12.1	Pioneer-2157	HRW	Afton	OK	74331
71	12.0	Stallion	HRW	Tonkawa	OK	74653
71	12.6	Tam-101	HRW	Chickasha	OK	73018
71	16.8	Thunderbird	HRW	Clay-Center	KS	67432
71	15.6	Thunderbird	HRW	McCook	NE	69001
71	14.0	Triumph	HRW	Stillwater	OK	74076
71	13.1	Yecora-Rojo	HRW	McFarland	CA	93250
72	15.0	Hawk	HRW	Edgar	MT	59026
72	14.5	Newton	HRW	Hiawatha	KS	66434
72	13.9	Pioneer-2157	HRW	Frederick	OK	73542
72	15.1	Victory	HRW	Pauline	KS	66619
72	17.0	Wheaton	HRS	Renville	MN	56284
72	12.1	Yecora-Rojo	HRW	Bakersfield	CA	93311
73	13.6	Abilene	HRW	Hiawatha	KS	66434
73	12.7	Anza	HRW	Stockton	CA	95208
73	12.3	Chisholm	HRW	Afton	OK	74331
73	15.6	Marshall	HRS	Argyle	MN	56713
73	12.5	Newton	HRW	Colby	KS	67701
73	14.2	Scout-66	HRW	Hemingford	NE	69348
73	15.9	Siouxland	HRW	Burlingame	KS	66413
73	14.1	Stoa	HRS	Grafton	ND	58237
73	14.6	Tam-107	HRW	Venango	NE	69168
73	14.7	Victory	HRW	Burlingame	KS	66413
73	14.0	Wheaton	HRS	Appleton	MN	56208
74	14.5	Arkan	HRW	Reserve	KS	66529
74	15.9	Cody	HRW	Hemingford	NE	69348
74	13.1	Newton	HRW	Colby	KS	67701
74	16.0	Newton	HRW	Hays	KS	67601
74	16.0	Newton	HRW	Natoma	KS	67651
74	13.6	Pioneer-2157	HRW	Frederick	OK	73542
74	13.1	Tam-107	HRW	Colby	KS	67701
74	14.5	Tam-107	HRW	Grant	NE	69140
74	13.9	Victory	HRW	Pauline	KS	66619
74	13.7	Victory	HRW	White-Cloud	KS	66094
74	12.5	Winoka	HRW	Havre	MT	59501
75	12.9	Anza	HRW	Stockton	CA	95208
75	13.3	Centura	HRW	Kimball	NE	69145

TABLE 5. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY HRD.

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
75	14.2	Marshall	HRS	Larimore	ND	58251
75	13.6	Mustang	HRW	Plains	KS	67869
75	11.6	Pioneer-2157	HRW	Afton	OK	74331
75	13.7	Pioneer-2157	HRW	Frederick	OK	73542
75	14.4	Redwin	HRW	Havre	MT	59501
75	13.4	Tam-107	HRW	Venango	NE	69168
75	13.3	Thunderbird	HRW	Reserve	KS	66529
75	14.5	Victory	HRW	Reserve	KS	66529
75	14.1	YR-Hi		Stockton	CA	95204
75	9.6	Yolo	HRW	Stockton	CA	95208
76	14.1	Hawk	HRW	Kimball	NE	69145
76	14.5	Marshall	HRS	Larimore	ND	58251
76	14.9	Marshall	HRS	Neché	ND	58265
76	13.4	Stallion	HRW	Bison	OK	73720
76	12.4	Stallion	HRW	Kingfisher	OK	73750
76	12.8	Stallion	HRW	Tonkawa	OK	74653
76	14.9	Thunderbird	HRW	Kimball	NE	69145
76	15.0	Wheaton	HRS	Madison	MN	56256
76	9.9	Yolo	HRW	Stockton	CA	95208
77	14.2	Abilene	HRW	Reserve	KS	66529
77	15.9	Abilene	HRW	Hay-Springs	NE	69347
77	13.0	Abilene-Shawnee	Mix	Topeka	KS	66618
77	13.7	Marshall	HRS	Appleton	MN	56208
77	13.2	Marshall	HRS	Argyle	MN	56713
77	15.6	Victory	HRW	Clay-Center	KS	67432
77	12.4	Victory	HRW	White-Cloud	KS	66094
78	12.2	Abilene	HRW	White-Cloud	KS	66094
78	14.3	Arkan	HRW	Hiawatha	KS	66434
78	13.6	Eagle	HRW	Hays	KS	67601
78	14.7	Guard	HRS	Brookings	SD	57006
78	15.1	Guard	HRS	Platt	SD	57369
78	16.1	Mesa	HRW	Woodward	OK	73802
78	13.5	Pioneer-2157	HRW	Frederick	OK	73542
78	17.5	Pioneer-906R	Mix	Foxhome	MN	56543
78	14.2	Wheaton	HRS	Argyle	MN	56713
78	14.7	Winoka	HRW	Havre	MT	59501
79	12.7	Larned	HRW	Topeka	KS	67861
79	16.8	Marshall	HRS	Crookston	MN	56716
79	13.9	Redwin	HRW	Havre	MT	59501
79	12.8	Tam-107	HRW	Chappell	NE	69129
79	13.7	Wheaton	HRS	Elbow-Lake	MN	56531
80	12.9	Abilene	HRW	White-Cloud	KS	66094
80	16.2	Anza	HRW	Dos-Palos	CA	93620
80	12.3	Anza	HRW	Williams	CA	95987
80	9.6	Larned	HRW	Topeka	KS	67861
80	13.5	Marshall	HRS	Climax	MN	56523
80	14.4	Marshall	HRS	Neché	ND	58265
80	12.1	Stallion	HRW	Kingfisher	OK	73750
80	12.3	Tadinia	HRS	Williams	CA	95987
80	13.5	Tam-107	HRW	Natoma	KS	67651
80	12.9	Yecora-Rojo	HRW	Firebaugh	CA	93622



TABLE 5. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY HRD.

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
80	14.2	Yecora-Rojo	HRW	Lemoore	CA	93245
81	15.3	Butte-86	HRS	Grafton	ND	58237
81	12.2	Hawk	HRW	Colby	KS	67701
81	15.4	Larned	HRW	Natoma	KS	67651
81	15.4	Larned	HRW	Plainville	KS	67663
81	12.3	Larned	HRW	Zurick	KS	67676
81	14.1	Marshall	HRS	Dumont	MN	56236
81	12.3	Tam-107	HRW	Trenton	MO	64683
81	13.2	Yecora-Rojo	HRW	Corcoran	CA	93212
82	11.4	Anza	HRW	Woodland	CA	95695
82	13.9	Marshall	HRS	Climax	MN	56523
82	14.9	Marshall	HRS	Renville	MN	56284
82	16.8	Mesa	HRW	Woodward	OK	73802
82	15.3	Newton	HRW	Hays	KS	67601
82	11.4	Norwin	HRW	Havre	MT	59501
82	12.0	Shawnee-Tam-107	Mix	Johnson	KS	67855
82	13.8	Tam-108	HRW	Topeka	KS	66618
82	16.7	Wheaton	HRS	Elbow-Lake	MN	56531
83	15.5	Centura	HRW	Hemingford	NE	69348
83	14.2	Guard	HRS	Platte	SD	57369
83	14.6	Marshall	HRS	Wheaton	MN	56296
83	14.7	Mesa	HRW	Frederick	OK	73542
83	14.4	Newton	HRW	Zurick	KS	67676
83	12.8	Tam-107	HRW	Colby	KS	67701
83	11.1	Tam-107	HRW	Gilman-City	MO	64642
83	14.6	Wheaton	HRS	Madison	MN	56256
84	11.2	Anza-Hi	HRW	Stockton	CA	95208
84	14.1	Butte-86	HRS	Grafton	ND	58237
84	14.4	Guard	HRS	Madison	SD	57042
84	15.0	Marshall	HRS	Herman	MN	56248
84	14.7	Mesa	HRW	Frederick	OK	73542
84	13.3	Newton	HRW	Hiawatha	KS	66434
84	14.4	Newton	HRW	Zurick	KS	67676
84	15.4	Shield	HRS	Rothsay	MN	56579
85	10.8	Anza	HRW	Stockton	CA	95201
85	15.0	Marshall	HRS	Elbow-Lake	MN	56531
85	15.4	Marshall	HRS	Foxhome	MN	56543
85	11.4	Norwin	HRW	Havre	MT	59501
85	13.9	Pioneer-2180	HRW	Medford	OK	73759
85	14.9	Stoa	HRS	Larimore	ND	58251
85	13.6	Thunderbird	HRW	Medford	OK	73759
86	14.7	Marshall	HRS	Wheaton	MN	56296
86	17.3	Marshall	HRS	Harvey	ND	58341
86	14.9	Norseman	HRS	Appleton	MN	56208
86	14.6	Pioneer-2369	HRS	Climax	MN	56523
86	16.2	Stoa	HRS	Grafton	ND	58237
86	12.9	Stokay	HRW	Los-Banos	CA	93635
86	13.8	Tam-107	HRW	Trenton	MO	64683
86	14.5	Wheaton	HRS	Danvers	MN	56231
86	13.2	Yecora-Rojo	HRW	Corcoran	CA	93212
87	15.2	Telemark	HRS	Neché	ND	58265

TABLE 5. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY HRD.

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
87	17.4	Vance	HRS	Holloway	MN	56249
88	13.8	Butte-86	HRS	Beach	ND	58621
88	15.9	Len	HRS	Scranton	ND	58653
88	15.4	Marshall	HRS	Herman	MN	56248
88	13.8	Marshall	HRS	Neché	ND	58265
88	14.8	Stoa	HRS	Danvers	MN	56231
89	16.2	Butte-86	HRS	Herman	MN	56248
89	16.3	Butte-86	HRS	Glenham	SD	57631
89	16.1	Len	HRS	Rothsay	MN	56579
89	15.2	Marshall	HRS	Argyle	MN	56713
89	15.5	Marshall	HRS	Argyle	MN	56713
89	16.4	Marshall	HRS	Madison	MN	56256
89	14.0	Stoa	HRS	Fredonia	ND	58440
89	18.0	Stoa	HRS	Harvey	ND	58341
89	12.2	Tam-107	HRW	Johnson	KS	67855
90	15.0	Marshall	HRS	Climax	MN	56523
91	15.3	Cert-Marshall	Mix	Madison	MN	56256
91	16.2	Len	HRS	Beach	ND	58621
91	14.6	Mesa	HRW	Frederick	OK	73542
91	15.7	Stoa	HRS	Neché	ND	58265
91	15.6	Wheaton	HRS	Rothsay	MN	56579
92	17.0	Marshall	HRS	Leeds	ND	58346
92	12.3	Tam-107	HRW	Hays	KS	67601
92	13.9	Waldron	HRS	Beulah	ND	58523
93	14.7	Butte	HRS	Aberdeen	SD	57401
93	16.9	Marshall	HRS	Elbow-Lake	MN	56531
93	17.1	Marshall	HRS	Elbow-Lake	MN	56531
93	17.1	Marshall	HRS	Rothsay	MN	56579
93	14.7	Mesa	HRW	Frederick	OK	73542
93	15.5	Pioneer-2369	HRS	Larimore	ND	58251
93	13.3	Tam-107	HRW	Gilman-City	MO	64642
94	15.0	Butte-86	HRS	Scranton	ND	58653
94	13.8	Larned	HRW	Plainville	KS	67663
94	16.6	Len	HRS	Carrington	ND	58421
94	14.6	Mesa-Cassidy	Mix	Frederick	OK	73542
94	15.4	Stoa	HRS	Beach	ND	58621
94	14.0	Tam-107	HRW	Hays	KS	67601
94	14.0	Waldron	HRS	Beulah	ND	58523
95	14.8	Butte-86	HRS	Herman	MN	56248
95	15.2	Butte-86	HRS	Florence	SD	57235
95	16.0	Len	HRS	Larimore	ND	58251
95	16.2	Wheaton	HRS	Crookston	MN	56716
96	15.9	Butte-86	HRS	Wheaton	MN	56296
96	15.6	Butte-86	HRS	Park-River	ND	58770
96	17.2	Len	HRS	Carrington	ND	58421
96	16.5	Len	HRS	Regan	ND	58477
96	16.0	Len	HRS	Scranton	ND	58653
96	12.0	Pioneer-2180	HRW	Bison	OK	73720
96	17.4	Pioneer-2305		Renville	MN	56284
97	15.2	Butte-86	HRS	Renville	MN	56284
97	16.0	Butte-86	HRS	Carrington	ND	58421

TABLE 5. HARDNESS AND PROTEIN(12% MC) OF '89 COMMERCIAL SAMPLES, BY HRD.

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
97	14.5	Butte-86	HRS	Neché	ND	58265
97	14.7	Butte-86	HRS	Bradley	SD	57217
97	15.7	Len	HRS	Scranton	ND	58653
97	14.7	Stoa	HRS	Carrington	ND	58421
97	17.8	Stoa	HRS	Harvey	ND	58341
98	13.8	Alex	HRS	Beulah	ND	58523
98	17.2	Butte-86	HRS	Herman	MN	56248
98	15.1	Butte-86	HRS	Carpenter	SD	57322
98	15.9	Len	HRS	Regan	ND	58477
98	15.1	Stoa	HRS	Carrington	ND	58421
98	13.7	Stoa	HRS	Kulm	ND	58456
98	13.6	Tam-107	HRW	Zurick	KS	67676
99	15.5	Mustang	HRW	Hays	KS	67601
99	13.1	Tam-107	HRW	Hays	KS	67601
100	15.9	Butte-86	HRS	Climax	MN	56523
100	16.0	Butte-86	HRS	Dumont	MN	56236
100	16.8	Marshall	HRS	Comstock	MN	56525
100	16.6	Marshall	HRS	Herman	MN	56248
101	15.8	Butte	HRS	Scranton	ND	58653
101	15.9	Butte-86	HRS	Harvey	ND	58341
102	16.8	Butte-86	HRS	Fredonia	ND	58440
102	12.4	Tam-107	HRW	Topeka	KS	67861
103	15.8	Butte	HRS	Williston	ND	58801
103	16.4	Butte-86	HRS	Carrington	ND	58421
103	16.9	Len	HRS	Fredonia	ND	58440
103	16.0	Stoa	HRS	Fredonia	ND	58440
104	16.9	Butte-86	HRS	Dumont	MN	56236
104	16.9	Butte-86	HRS	Larimore	ND	58251
104	17.4	Marshall	HRS	Argyle	MN	56713
104	16.0	Stoa	HRS	Regan	ND	58477
106	15.7	Butte	HRS	Fredonia	ND	58440
106	17.4	Butte-86	HRS	Comstock	MN	56525
107	15.0	Alex	HRS	Beulah	ND	58523
107	19.8	Stoa	HRS	Beach	ND	58621
108	18.2	Marshall	HRS	Comstock	MN	56525
108	16.7	Stoa	HRS	Beulah	ND	58523
108	17.9	Stoa	HRS	Beulah	ND	58523
110	18.2	Butte-86	HRS	Regan	ND	58477
110	19.9	Stoa	HRS	Regan	ND	58477
111	18.2	Marshall	HRS	Climax	MN	56523
120	18.6	Butte-86	HRS	Regan	ND	58477



TABLE 6. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY HRD.

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
14	13.2	VC084077		Coulee-City	WA	99115
15	12.1	Victory	HRW	Brown-Co	KS	66434
16	10.0	OR83801	SWW	Wasco-Co	OR	97063
16	11.9	Terra-SR87	SRW	Labette	KS	67350
17	11.3	Becker	SRW	Franklin-Co	KS	66067
18	10.4	VC084077		Pullman	WA	99163
18	11.2	WA7529		Coulee-City	WA	99115
19	12.3	Becker	SRW	Brown-Co	KS	66434
19	11.4	Dusty	SWW	Coulee-City	WA	99115
19	11.4	Lincoln	SRW	Labette	KS	67350
19	12.8	WA7431		Coulee-City	WA	99115
20	10.0	Dusty	SWW	Pullman	WA	99163
20	12.4	Lewjain	SWW	Coulee-City	WA	99115
21	12.7	Cardinal	SRW	Brown-Co	KS	66434
21	11.1	Stephens	SWW	Wasco-Co	OR	97063
21	7.9	Tres	Club	Pomeroy	WA	99347
22	13.6	Hill-81	SWW	Coulee-City	WA	99115
22	11.1	Lincoln	SRW	Franklin-Co	KS	66067
22	13.2	Pioneer-2551	SRW	Brown-Co	KS	66434
22	8.8	Stephens	SWW	Pomeroy	WA	99347
22	10.7	VC084077		Pomeroy	WA	99347
23	12.4	Stephens	SWW	Coulee-City	WA	99115
23	11.8	Terra-201	SRW	Franklin-Co	KS	66067
23	11.4	Terra-SR87	SRW	Franklin-Co	KS	66067
24	12.7	Caldwell	SRW	Brown-Co	KS	66434
24	11.5	Dusty	SWW	Walla-Walla	WA	99362
24	8.4	Hill-81	SWW	Pomeroy	WA	99347
24	9.5	Malcolm	SWW	Wasco-Co	OR	97063
24	11.3	OR83801	SWW	Moro	OR	97039
24	8.2	Tres	Club	Pendleton	OR	97801
24	12.4	Tres	Club	Coulee-City	WA	99115
24	8.4	WA7431		Pomeroy	WA	99347
24	13.4	WA7627		Coulee-City	WA	99115
25	12.4	Nugaines	SWW	Coulee-City	WA	99115
25	10.9	Nugaines	SWW	Pullman	WA	99163
25	9.5	OSU-21	SWW	Corvallis	OR	97330
25	12.1	Pioneer-2551	SRW	Franklin-Co	KS	66067
25	12.8	Twain	SRW	Labette	KS	67350
26	12.4	Cardinal	SRW	Labette	KS	67350
26	10.4	Luke-WA7529	Mix	Pullman	WA	99163
26	11.2	Madsen	SWW	Pullman	WA	99163
26	9.2	Malcolm	SWW	Corvallis	OR	97330
26	11.7	Malcolm	SWW	Moro	OR	97039
26	8.4	WA7529		Pomeroy	WA	99347
27	11.1	Caldwell	SRW	Franklin-Co	KS	66067
27	11.2	Caldwell	SRW	Labette	KS	67350
27	8.3	Dusty	SWW	Pomeroy	WA	99347
27	12.1	Hancock	SRW	Franklin-Co	KS	66067
27	9.9	Hill	SWW	Corvallis	OR	97330
27	11.6	Terra-SR86	SRW	Franklin-Co	KS	66067
28	8.4	Lewjain	SWW	Pomeroy	WA	99347

**TABLE 6. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY HRD.**

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
29	9.8	Hill	SWW	Wasco-Co	OR	97063
29	11.1	Huntsman		Pullman	WA	99163
29	10.4	Madsen	SWW	Corvallis	OR	97330
29	9.4	Malcolm	SWW	Pomeroy	WA	99347
29	9.0	Stephens	SWW	Pendleton	OR	97801
29	12.4	Terra-201-Exp	SRW	Labette	KS	67350
29	10.4	WA7431		Pullman	WA	99163
30	12.2	Cardinal	SRW	Franklin-Co	KS	66067
30	12.4	Daws	SWW	Coulee-City	WA	99115
30	11.5	Daws	SWW	Walla-Walla	WA	99362
30	12.2	Lewjain	SWW	Walla-Walla	WA	99362
30	13.3	Lincoln	SRW	Brown-Co	KS	66434
30	8.8	Nugaines	SWW	Pomeroy	WA	99347
30	12.8	Pioneer-2551	SRW	Labette	KS	67350
31	9.7	Daws	SWW	Pomeroy	WA	99347
31	11.0	Lewjain	SWW	Pullman	WA	99163
31	9.8	Madsen	SWW	Wasco-Co	OR	97063
31	8.8	Madsen	SWW	Pomeroy	WA	99347
31	11.3	Nugaines	SWW	Walla-Walla	WA	99362
31	11.5	Terra-SR86	SRW	Labette	KS	67350
31	9.9	Tres	Club	Corvallis	OR	97330
31	11.8	VC084077		Walla-Walla	WA	99362
31	11.2	WA7431		Walla-Walla	WA	99362
31	11.9	WA7529		Walla-Walla	WA	99362
32	8.2	Madsen	SWW	Pendleton	OR	97801
32	10.9	Malcolm	SWW	Coulee-City	WA	99115
32	11.6	Tres	Club	Moro	OR	97039
33	10.5	Hill-81	SWW	Pullman	WA	99163
33	11.8	Madsen	SWW	Moro	OR	97039
33	11.1	Stephens	SWW	Walla-Walla	WA	99362
33	8.8	Tres	Club	Wasco-Co	OR	97063
33	11.5	Tres	Club	Walla-Walla	WA	99362
34	11.6	Hyak	SWW	Coulee-City	WA	99115
34	12.0	Madsen	SWW	Coulee-City	WA	99115
34	11.6	OR83801	SWW	Corvallis	OR	97330
35	12.2	Hill-81	SWW	Walla-Walla	WA	99362
35	9.8	Hyak	SWW	Pomeroy	WA	99347
35	11.3	Malcolm	SWW	Pullman	WA	99163
35	10.6	UC850	Club	Butte-Co	CA	95965
36	11.6	Malcolm	SWW	Walla-Walla	WA	99362
36	11.2	OR83801	SWW	Pendleton	OR	97801
36	9.7	Stephens	SWW	Corvallis	OR	97330
36	11.3	Stephens	SWW	Pullman	WA	99163
36	10.5	WA7627		Pomeroy	WA	99347
37	13.0	Chisholm-Irrigated	HRW	Greeley-Co	KS	67879
37	10.4	Daws	SWW	Pullman	WA	99163
37	8.9	Hill	SWW	Pendleton	OR	97801
37	12.3	WA7627		Walla-Walla	WA	99362
38	12.9	Chisholm	HRW	Woodward	OK	73801
38	8.8	Malcolm	SWW	Pendleton	OR	97801
38	13.7	Tam-108	HRW	Reno-Co	KS	67501

TABLE 6. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY HRD.

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
39	12.8	OK87630	HRW	Woodward	OK	73801
39	14.9	Tam-108-Irrigated	HRW	Stafford-Co	KS	67576
39	11.0	Tres	Club	Pullman	WA	99163
39	10.1	UC850	Club	Sutter-Co	CA	95901
40	12.2	Hyak	SWW	Walla-Walla	WA	99362
40	10.5	OSU-21	SWW	Moro	OR	97039
40	11.2	Stephens	SWW	Moro	OR	97039
41	10.0	Hyak	SWW	Pullman	WA	99163
41	13.0	Madsen	SWW	Walla-Walla	WA	99362
41	13.5	OK87630	HRW	Lahoma	OK	73754
41	13.3	Pioneer-2157-Irrigated	HRW	Greeley-Co	KS	67879
42	12.9	Chisholm	HRW	Lahoma	OK	73754
42	13.3	OK87542	HRW	Lahoma	OK	73754
42	14.6	Quantum-561	HRW	Brown-Co	KS	66434
43	14.8	Chisholm-Irrigated	HRW	Goodwell	OK	73939
43	12.7	OK87542	HRW	Woodward	OK	73801
43	13.2	OK87W663	HRW	Lahoma	OK	73754
43	15.2	Tam-200-Irrigated	HRW	Stafford-Co	KS	67576
43	15.7	Vona	HRW	Mead	NE	68041
44	13.8	OK86215	HRW	Lahoma	OK	73754
44	13.4	OK86223	HRW	Lahoma	OK	73754
44	16.0	Quantum-574	HRW	Reno-Co	KS	67501
44	10.9	Tam-108	HRW	Geneva	NE	68361
44	12.2	Tam-108-Irrigated	HRW	Greeley-Co	KS	67879
44	14.3	Tam-200	HRW	Reno-Co	KS	67501
45	13.3	Bounty-205	HRW	Garden-City	KS	67846
45	14.8	Chisholm	HRW	Brown-Co	KS	66434
45	11.6	Chisholm	HRW	Nardin	OK	74646
45	13.4	OK86223	HRW	Woodward	OK	73801
45	9.2	UC850	Club	Merced	CA	95340
46	16.4	Agseco-7853-Irrigated	HRW	Stafford-Co	KS	67576
46	12.5	Chisholm	HRW	Garden-City	KS	67846
46	13.7	Chisholm	HRW	Altus	OK	73521
46	14.7	Colt	HRW	Clay-Center	NE	68933
46	14.2	OK87W663	HRW	Altus	OK	73521
46	11.6	Tam-108-Dryland	HRW	Thomas-Co	KS	67701
47	14.4	Karl	HRW	Woodward	OK	73801
47	15.0	Newton-Irrigated	HRW	Stafford-Co	KS	67576
47	16.6	Pioneer-2157-Irrigated	HRW	Stafford-Co	KS	67576
47	12.5	Siouxland-Irrigated	HRW	Greeley-Co	KS	67879
48	11.6	Chisholm	HRW	Labette	KS	67350
48	14.2	OK87W663-Irrigated	HRW	Goodwell	OK	73939
49	15.2	KS84HW196-Irrigated	HRW	Stafford-Co	KS	67576
49	14.6	OK86223	HRW	Stillwater	OK	74074
49	14.4	OK87W663	HRW	Stillwater	OK	74074
49	13.6	Siouxland-Irrigated	HRW	Finney-Co	KS	67846
49	11.9	Tam-108	HRW	Franklin-Co	KS	66067
49	12.7	Tam-200-Irrigated	HRW	Greeley-Co	KS	67879
49	15.0	Vona	HRW	Clay-Center	NE	68933
50	14.8	Abilene	HRW	Reno-Co	KS	67501
50	12.9	Bounty-205	HRW	Nardin	OK	74646



**TABLE 6. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY HRD.**

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
50	13.6	Chisholm	HRW	Stillwater	OK	74074
50	15.9	Dodge-Irrigated	HRW	Stafford-Co	KS	67576
50	12.9	Newton-Irrigated	HRW	Greeley-Co	KS	67879
50	13.2	OK87575	HRW	Lahoma	OK	73754
50	13.9	OK87630	HRW	Altus	OK	73521
50	13.6	OK87630	HRW	Stillwater	OK	74074
50	13.2	Quantum-578-Irrigated	HRW	Greeley-Co	KS	67879
50	13.5	Quantun-574	HRW	Labette	KS	67350
50	14.9	Tam-200-Dryland	HRW	Finney-Co	KS	67846
50	12.5	Terra-HR151	SRW	Labette	KS	67350
50	13.5	UC850	Club	Davis	CA	95616
50	12.8	UC850	Club	Kern-Co	CA	93301
51	12.3	Agseco-7846-Dryland	HRW	Thomas-Co	KS	67701
51	12.8	Mesa-Irrigated	HRW	Greeley-Co	KS	67879
51	14.3	OK87542-Irrigated	HRW	Goodwell	OK	73939
51	15.6	OK87630-Irrigated	HRW	Goodwell	OK	73939
51	13.6	Quantum-578-Irrigated	HRW	Finney-Co	KS	67846
52	13.7	Agseco-7846-Irrigated	HRW	Greeley-Co	KS	67879
52	15.9	Agseco-7846-Irrigated	HRW	Stafford-Co	KS	67576
52	12.9	Bounty-205	HRW	Geneva	NE	68361
52	12.3	Chisholm	HRW	Franklin-Co	KS	66067
52	16.5	MBS-8645-Irrigated	HRW	Stafford-Co	KS	67576
52	13.8	Norkan-Irrigated	HRW	Greeley-Co	KS	67879
52	14.0	OK84284	HRW	Woodward	OK	73801
52	14.5	OK87575	HRW	Altus	OK	73521
52	10.0	OSU-21	SWW	Pendleton	OR	97801
52	13.7	Rio-Blanco-Irrigated	HWW	Finney-Co	KS	67846
52	14.3	Tam-107-Irrigated	HRW	Stafford-Co	KS	67576
52	11.7	Tam-108-Irrigated	HRW	Thomas-Co	KS	67701
53	14.1	Agseco-7846	HRW	Reno-Co	KS	67501
53	12.9	Agseco-7846-Irrigated	HRW	Finney-Co	KS	67846
53	15.4	Arkan	HRW	Reno-Co	KS	67501
53	12.3	Century-Irrigated	HRW	Greeley-Co	KS	67879
53	15.2	Chisholm	HRW	Geneva	NE	68361
53	13.2	Colt	HRW	Sidney	NE	69162
53	12.7	Colt-Dryland	HRW	Thomas-Co	KS	67701
53	13.2	Colt-Irrigated	HRW	Greeley-Co	KS	67879
53	16.5	KS8010-1-4-2-Exp-Irrigated	HRW	Stafford-Co	KS	67576
53	13.4	KS84HW196-Irrigated	HRW	Finney-Co	KS	67846
53	13.6	MBS-8645-Irrigated	HRW	Finney-Co	KS	67846
53	15.1	OK87542	HRW	Altus	OK	73521
53	14.0	OK87542	HRW	Stillwater	OK	74074
53	12.0	OK87W663	HRW	Woodward	OK	73801
53	15.2	Quantum-574	HRW	Brown-Co	KS	66434
53	13.0	Quantum-574	HRW	Franklin-Co	KS	66067
53	11.9	Tam-108	HRW	Brown-Co	KS	66434
53	16.2	Tam-200	HRW	Harvey-Co	KS	67114
53	12.1	Tam-200	HRW	Labette	KS	67350
53	11.5	Tam-200	HRW	Sidney	NE	69162
53	13.7	Tam-200-Irrigated	HRW	Finney-Co	KS	67846
53	16.4	Vona	HRW	North-Platte	NE	69101

TABLE 6. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY HRD.

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
54	12.2	Agseco-7837-Irrigated	HRW	Thomas-Co	KS	67701
54	12.9	Agseco-7846	HRW	Garden-City	KS	67846
54	13.9	Dodge	HRW	Labette	KS	67350
54	14.5	Karl	HRW	Lahoma	OK	73754
54	15.0	Mustang	HRW	Reno-Co	KS	67501
54	15.2	Quantum-561	HRW	Republic-Co	KS	66935
54	13.4	Quantum-562-Irrigated	HRW	Finney-Co	KS	67846
54	13.0	Quantum-562-Irrigated	HRW	Greeley-Co	KS	67879
54	16.9	Quantum-574	HRW	Harvey-Co	KS	67114
54	13.4	Rio-Blanco-Irrigated	HWW	Greeley-Co	KS	67879
54	15.2	Tam-108	HRW	Harvey-Co	KS	67114
54	12.0	Tam-108	HRW	Nardin	OK	74646
54	11.7	Tam-200-Irrigated	HRW	Thomas-Co	KS	67701
54	12.1	W83-256	HRW	Nardin	OK	74646
55	13.9	Abilene-Irrigated	HRW	Finney-Co	KS	67846
55	13.1	Centurk-78	HRW	Clay-Center	NE	68933
55	13.7	Karl-Irrigated	HRW	Finney-Co	KS	67846
55	14.0	Karl-Irrigated	HRW	Greeley-Co	KS	67879
55	15.0	OK86223	HRW	Altus	OK	73521
55	14.4	OK86223-Irrigated	HRW	Goodwell	OK	73939
55	14.7	Pioneer-2157	HRW	Brown-Co	KS	66434
55	16.0	Pioneer-2157	HRW	Ellis-Co	KS	67601
55	14.1	Pioneer-2157	HRW	Franklin-Co	KS	66067
55	17.1	Pioneer-2157	HRW	Harvey-Co	KS	67114
55	15.5	Pioneer-2157	HRW	Reno-Co	KS	67501
55	13.0	Redland	HRW	Clay-Center	NE	68933
55	12.2	Tam-108	HRW	Garden-City	KS	67846
55	14.1	Tam-200	HRW	Clay-Center	NE	68933
55	15.2	Tam-200	HRW	North-Platte	NE	69101
55	12.6	Tam-200	HRW	Woodward	OK	73801
55	15.1	Triumph-64	HRW	Reno-Co	KS	67501
55	13.5	Victory-Irrigated	HRW	Finney-Co	KS	67846
55	11.8	Vona	HRW	Alliance	NE	69301
55	14.1	Vona	HRW	Sidney	NE	69162
56	12.5	Agseco-7837	HRW	Franklin-Co	KS	66067
56	13.4	Agseco-7837-Irrigated	HRW	Finney-Co	KS	67846
56	13.3	Agseco-7837-Irrigated	HRW	Greeley-Co	KS	67879
56	11.5	Agseco-7846	HRW	Nardin	OK	74646
56	16.4	Bronco	HRW	Harvey-Co	KS	67114
56	14.5	Bronco	HRW	Reno-Co	KS	67501
56	12.0	Bronco-Dryland	HRW	Thomas-Co	KS	67701
56	16.9	Colt	HRW	Mead	NE	68041
56	15.7	MBS-8645	HRW	Reno-Co	KS	67501
56	12.3	Newton	HRW	Brown-Co	KS	66434
56	16.0	Norkan	HRW	Reno-Co	KS	67501
56	14.8	OK86215	HRW	Altus	OK	73521
56	14.2	OK86215	HRW	Woodward	OK	73801
56	13.7	Pioneer-2157	HRW	Garden-City	KS	67846
56	14.5	Quantum-562	HRW	Republic-Co	KS	66935
56	14.8	Siouxland	HRW	Stillwater	OK	74074
56	14.4	Tam-200	HRW	Stillwater	OK	74074

**TABLE 6. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY HRD.**

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
57	14.2	Agseco-7833	HRW	Reno-Co	KS	67501
57	14.1	Agseco-7853-Irrigated	HRW	Finney-Co	KS	67846
57	13.5	Arkan-Irrigated	HRW	Greeley-Co	KS	67879
57	13.4	Bounty-WH52498-Dryland	HRW	Thomas-Co	KS	67701
57	12.3	Century	HRW	Labette	KS	67350
57	14.1	Dodge-Irrigated	HRW	Finney-Co	KS	67846
57	12.9	Hawk-Irrigated	HRW	Greeley-Co	KS	67879
57	12.1	Newton-Dryland	HRW	Thomas-Co	KS	67701
57	13.5	OK84287	HRW	Lahoma	OK	73754
57	12.3	OK87575	HRW	Woodward	OK	73801
57	16.3	Sierra	HRW	Harvey-Co	KS	67114
57	13.2	Stallion	HRW	Garden-City	KS	67846
57	13.0	Tam-101	HRW	Nardin	OK	74646
57	15.5	Tam-200	HRW	Mead	NE	68041
57	15.0	Victory	HRW	Reno-Co	KS	67501
58	15.9	Agseco-7846-Dryland	HRW	Finney-Co	KS	67846
58	13.8	Arkan-Dryland	HRW	Thomas-Co	KS	67701
58	11.8	Bounty-205	HRW	Berthoud	CO	80513
58	12.1	Centurk-78	HRW	Sidney	NE	69162
58	15.0	Colt	HRW	Republic-Co	KS	66935
58	16.8	Dodge	HRW	Reno-Co	KS	67501
58	16.4	KS8010*-72-Exp-Irrigated	HRW	Stafford-Co	KS	67576
58	11.9	Newton	HRW	Labette	KS	67350
58	12.9	Pioneer-2163-Irrigated	HRW	Greeley-Co	KS	67879
58	12.4	Rio-Blanco	HWW	Labette	KS	67350
58	12.8	Rio-Blanco-Dryland	HWW	Thomas-Co	KS	67701
58	12.7	Siouxland	HRW	Woodward	OK	73801
58	14.5	Tam-200	HRW	Republic-Co	KS	66935
58	12.3	Tam-200-Dryland	HRW	Thomas-Co	KS	67701
58	12.8	Tam-200-Irrigated	HRW	Goodwell	OK	73939
58	13.0	Victory-Irrigated	HRW	Greeley-Co	KS	67879
59	13.4	Abilene-Dryland	HRW	Thomas-Co	KS	67701
59	12.3	Agseco-7805-Dryland	HRW	Thomas-Co	KS	67701
59	16.5	Agseco-7837-Irrigated	HRW	Stafford-Co	KS	67576
59	13.5	Arkan-Irrigated	HRW	Finney-Co	KS	67846
59	14.2	Bounty-WH52498	HRW	Brown-Co	KS	66434
59	13.1	Brule	HRW	Clay-Center	NE	68933
59	15.1	Century-Irrigated	HRW	Stafford-Co	KS	67576
59	15.7	Colt	HRW	North-Platte	NE	69101
59	13.9	Karl	HRW	Labette	KS	67350
59	12.7	Larned	HRW	Labette	KS	67350
59	12.8	MBS-8625-Irrigated	HRW	Thomas-Co	KS	67701
59	16.0	Mustang-Irrigated	HRW	Stafford-Co	KS	67576
59	13.5	OK84286	HRW	Woodward	OK	73801
59	14.5	OK87575	HRW	Stillwater	OK	74074
59	13.1	Pioneer-2163	HRW	Brown-Co	KS	66434
59	11.6	Quantum-567	HRW	Geneva	NE	68361
59	12.6	Quantum-578-Irrigated	HRW	Thomas-Co	KS	67701
59	15.1	Rio-Blanco	HWW	Republic-Co	KS	66935
59	13.9	Siouxland	HRW	Clay-Center	NE	68933
59	13.6	Tam-200	HRW	Brown-Co	KS	66434



**TABLE 6. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY HRD.**

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
59	12.1	Tam-200	HRW	Franklin-Co	KS	66067
59	13.7	Terra-HR150	SRW	Labette	KS	67350
59	11.6	Terra-HR151	SRW	Franklin-Co	KS	66067
60	14.9	Agseco-7846	HRW	Ellis-Co	KS	67601
60	15.1	Agseco-7846	HRW	Republic-Co	KS	66935
60	13.5	Arkan	HRW	Garden-City	KS	67846
60	17.2	Bounty-WH52498	HRW	Harvey-Co	KS	67114
60	14.5	Dodge	HRW	Garden-City	KS	67846
60	15.2	Dodge-Irrigated	HRW	Greeley-Co	KS	67879
60	13.1	KS8010-1-4-2-Exp	HRW	Labette	KS	67350
60	14.6	Newton	HRW	Reno-Co	KS	67501
60	12.5	Newton	HRW	Geneva	NE	68361
60	13.1	Newton-Irrigated	HRW	Finney-Co	KS	67846
60	13.1	OK84286	HRW	Lahoma	OK	73754
60	12.7	Pioneer-2157-Irrigated	HRW	Finney-Co	KS	67846
60	13.8	Pioneer-2163	HRW	Reno-Co	KS	67501
60	12.5	Pioneer-2163-Dryland	HRW	Thomas-Co	KS	67701
60	12.3	Pioneer-2163-Irrigated	HRW	Thomas-Co	KS	67701
60	12.5	Rio-Blanco	HWW	Franklin-Co	KS	66067
60	14.7	Sierra	HRW	Reno-Co	KS	67501
60	12.7	Siouxland	HRW	Franklin-Co	KS	66067
60	13.9	Siouxland	HRW	Lahoma	OK	73754
60	13.1	Thunderbird-Irrigated	HRW	Greeley-Co	KS	67879
60	16.8	Triumph-64	HRW	Harvey-Co	KS	67114
60	13.2	Triumph-64	HRW	Labette	KS	67350
61	14.2	Agseco-7837	HRW	Brown-Co	KS	66434
61	15.3	Arkan	HRW	Ellis-Co	KS	67601
61	17.2	Arkan	HRW	Harvey-Co	KS	67114
61	17.9	Bounty-206-Irrigated	HRW	Stafford-Co	KS	67576
61	12.5	Bronco	HRW	Garden-City	KS	67846
61	14.5	Bronco-Dryland	HRW	Finney-Co	KS	67846
61	14.4	Brule	HRW	Mead	NE	68041
61	12.0	Century	HRW	Nardin	OK	74646
61	13.8	Dodge-Irrigated	HRW	Thomas-Co	KS	67701
61	13.1	Hawk-Irrigated	HRW	Finney-Co	KS	67846
61	13.2	KS84HW196-Irrigated	HRW	Greeley-Co	KS	67879
61	15.8	Newton	HRW	Harvey-Co	KS	67114
61	14.7	Newton	HRW	Republic-Co	KS	66935
61	14.0	Norkan-Irrigated	HRW	Finney-Co	KS	67846
61	14.5	OK84286	HRW	Stillwater	OK	74074
61	15.3	OK86215-Irrigated	HRW	Goodwell	OK	73939
61	15.4	Pioneer-2157	HRW	Republic-Co	KS	66935
61	13.5	Pioneer-2157	HRW	Geneva	NE	68361
61	12.6	Pioneer-2163-Irrigated	HRW	Finney-Co	KS	67846
61	14.7	Redland-Dryland	HRW	Finney-Co	KS	67846
61	12.2	Rio-Blanco	HWW	Nardin	OK	74646
61	16.8	Siouxland-Irrigated	HRW	Stafford-Co	KS	67576
61	13.3	Tam-200	HRW	Lahoma	OK	73754
61	12.5	Terra-HR150	SRW	Franklin-Co	KS	66067
61	11.2	Terra-HR152-Exp	SRW	Labette	KS	67350
61	15.5	Victory-Irrigated	HRW	Stafford-Co	KS	67576

**TABLE 6. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY HRD.**

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
62	11.6	Batum	HRW	Wasco-Co	OR	97063
62	12.8	Bounty-WH52498-Irrigated	HRW	Thomas-Co	KS	67701
62	14.7	Bronco	HRW	Ellis-Co	KS	67601
62	14.0	Hawk	HRW	Reno-Co	KS	67501
62	15.1	KS8010*-72-Exp	HRW	Republic-Co	KS	66935
62	16.9	KS8010-1-4-2-Exp	HRW	Harvey-Co	KS	67114
62	13.6	Karl	HRW	Nardin	OK	74646
62	12.7	Mesa	HRW	Franklin-Co	KS	66067
62	14.4	OK84286-Irrigated	HRW	Goodwell	OK	73939
62	14.9	OK86215	HRW	Stillwater	OK	74074
62	14.1	OK87575-Irrigated	HRW	Goodwell	OK	73939
62	14.8	Pioneer-2157-Dryland	HRW	Greeley-Co	KS	67879
62	14.4	Pioneer-2163	HRW	Ellis-Co	KS	67601
62	15.3	Quantum-562	HRW	Ellis-Co	KS	67601
62	12.4	Quantum-562-Dryland	HRW	Thomas-Co	KS	67701
62	14.1	Redland	HRW	North-Platte	NE	69101
62	13.4	Rio-Blanco	HWW	Garden-City	KS	67846
62	13.0	Sierra	HRW	Franklin-Co	KS	66067
62	14.2	Siouxland	HRW	Reno-Co	KS	67501
62	14.1	Star-Seed-830	HRW	Brown-Co	KS	66434
62	12.5	Tam-107-Irrigated	HRW	Finney-Co	KS	67846
62	14.9	Tam-200	HRW	Altus	OK	73521
62	11.5	Terra-152	SRW	Franklin-Co	KS	66067
63	17.0	Abilene-Dryland	HRW	Finney-Co	KS	67846
63	12.3	Abilene-Irrigated	HRW	Thomas-Co	KS	67701
63	15.8	Agseco-7833	HRW	Ellis-Co	KS	67601
63	15.3	Agseco-7833	HRW	Republic-Co	KS	66935
63	15.8	Agseco-7837-Dryland	HRW	Finney-Co	KS	67846
63	12.5	Arkan	HRW	Nardin	OK	74646
63	12.7	Arkan-Irrigated	HRW	Thomas-Co	KS	67701
63	17.2	Bounty-WH52498-Exp-Dryland	HRW	Finney-Co	KS	67846
63	14.2	Brule	HRW	North-Platte	NE	69101
63	12.8	Century	HRW	Brown-Co	KS	66434
63	15.4	Century	HRW	Harvey-Co	KS	67114
63	12.9	Chisholm	HRW	Berthoud	CO	80513
63	13.7	Hancock	SRW	Brown-Co	KS	66434
63	14.8	KS84HW196	HRW	Reno-Co	KS	67501
63	12.7	KS84HW196-Dryland	HRW	Thomas-Co	KS	67701
63	13.7	Karl	HRW	Garden-City	KS	67846
63	16.0	Karl	HRW	Stillwater	OK	74074
63	13.1	MBS-8645-Exp	HRW	Labette	KS	67350
63	12.5	Newton	HRW	Franklin-Co	KS	66067
63	14.0	Norkan	HRW	Brown-Co	KS	66434
63	13.1	Norkan	HRW	Labette	KS	67350
63	13.2	Quantum-578	HRW	Garden-City	KS	67846
63	15.1	Rio-Blanco	HWW	Ellis-Co	KS	67601
63	12.7	Sierra-Dryland	HRW	Thomas-Co	KS	67701
63	13.2	Sierra-Irrigated	HRW	Greeley-Co	KS	67879
63	13.8	Triumph	HRW	Franklin-Co	KS	66067
63	12.0	UC839	HRS	Merced	CA	95340
64	12.5	Abilene	HRW	Labette	KS	67350

TABLE 6. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY HRD.

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
64	14.0	Agseco-7805	HRW	Republic-Co	KS	66935
64	13.6	Agseco-7805-Irrigated	HRW	Finney-Co	KS	67846
64	17.1	Agseco-7837	HRW	Harvey-Co	KS	67114
64	15.5	Agseco-7837	HRW	Reno-Co	KS	67501
64	15.6	Agseco-7837	HRW	Republic-Co	KS	66935
64	12.6	Arkan	HRW	Labette	KS	67350
64	15.0	Bronco	HRW	Republic-Co	KS	66935
64	12.8	Century	HRW	Franklin-Co	KS	66067
64	12.5	Century-Dryland	HRW	Thomas-Co	KS	67701
64	12.9	Century-Irrigated	HRW	Finney-Co	KS	67846
64	13.0	Dodge	HRW	Franklin-Co	KS	66067
64	13.6	Karl-Irrigated	HRW	Thomas-Co	KS	67701
64	16.0	MBS-8625	HRW	Ellis-Co	KS	67601
64	13.0	Mesa	HRW	Garden-City	KS	67846
64	12.2	Mustang	HRW	Nardin	OK	74646
64	13.9	Newton-Dryland	HRW	Greeley-Co	KS	67879
64	13.2	Norkan	HRW	Nardin	OK	74646
64	14.3	OK84287-Irrigated	HRW	Goodwell	OK	73939
64	14.9	Pioneer-2163-Dryland	HRW	Finney-Co	KS	67846
64	16.3	Quantum-562-Dryland	HRW	Finney-Co	KS	67846
64	12.7	Quantum-578	HRW	Nardin	OK	74646
64	11.8	Redland	HRW	Brown-Co	KS	66434
64	11.2	Redland	HRW	Geneva	NE	68361
64	15.0	Sierra	HRW	Republic-Co	KS	66935
64	12.4	Siouxland	HRW	Labette	KS	67350
64	15.2	Tam-101	HRW	Geneva	NE	68361
64	12.4	Tam-107-Irrigated	HRW	Greeley-Co	KS	67879
64	15.3	Thunderbird	HRW	Reno-Co	KS	67501
65	13.1	Agseco-7846	HRW	Brown-Co	KS	66434
65	10.2	Batum	HRW	Corvallis	OR	97330
65	13.1	Bounty-206	HRW	Labette	KS	67350
65	16.2	Bounty-206	HRW	Reno-Co	KS	67501
65	14.2	Bounty-WH52498	HRW	Franklin-Co	KS	66067
65	13.8	Bounty-WH52498-Irrigated	HRW	Finney-Co	KS	67846
65	17.8	Dodge	HRW	Harvey-Co	KS	67114
65	14.8	Dodge-Dryland	HRW	Thomas-Co	KS	67701
65	16.2	KS8010*-72-Exp	HRW	Harvey-Co	KS	67114
65	14.9	KS8010*-72-Exp	HRW	Reno-Co	KS	67501
65	14.8	KS8010-1-4-2-Exp	HRW	Reno-Co	KS	67501
65	12.2	KS84HW196-Irrigated	HRW	Thomas-Co	KS	67701
65	13.1	Mesa-Dryland	HRW	Thomas-Co	KS	67701
65	13.6	Norkan	HRW	Franklin-Co	KS	66067
65	15.1	Rio-Blanco	HWW	Reno-Co	KS	67501
65	14.7	Scout-66	HRW	Reno-Co	KS	67501
65	14.1	Sierra	HRW	Brown-Co	KS	66434
65	13.2	Thunderbird	HRW	Franklin-Co	KS	66067
66	13.6	Abilene	HRW	Garden-City	KS	67846
66	13.4	Abilene-Irrigated	HRW	Greeley-Co	KS	67879
66	11.4	Arapahoe	HRW	Sidney	NE	69162
66	13.2	Arapahoe-Irrigated	HRW	Greeley-Co	KS	67879
66	13.9	Arkan	HRW	Brown-Co	KS	66434



TABLE 6. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY HRD.

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
66	10.7	Brule	HRW	Sidney	NE	69162
66	12.3	Carson-Dryland	HRW	Thomas-Co	KS	67701
66	12.1	Hawk	HRW	Nardin	OK	74646
66	15.8	KS84HW196-Dryland	HRW	Finney-Co	KS	67846
66	15.1	Karl-Dryland	HRW	Thomas-Co	KS	67701
66	14.1	Larned	HRW	Reno-Co	KS	67501
66	13.5	MBS-8645	HRW	Franklin-Co	KS	66067
66	12.9	Mustang	HRW	Garden-City	KS	67846
66	16.5	Mustang	HRW	Harvey-Co	KS	67114
66	13.7	Norkan-Dryland	HRW	Thomas-Co	KS	67701
66	14.3	OK84287	HRW	Stillwater	OK	74074
66	13.0	Pioneer-2157	HRW	Labette	KS	67350
66	12.6	Pioneer-2163	HRW	Labette	KS	67350
66	14.9	Probrand-775	HRS	Davis	CA	95616
66	14.1	Quantum-562-Dryland	HRW	Greeley-Co	KS	67879
66	11.9	Redland-Dryland	HRW	Thomas-Co	KS	67701
66	13.5	Sierra-Irrigated	HRW	Finney-Co	KS	67846
66	16.4	Siouxland	HRW	Harvey-Co	KS	67114
66	14.0	Tam-200-Dryland	HRW	Greeley-Co	KS	67879
66	13.6	Thunderbird-Irrigated	HRW	Finney-Co	KS	67846
66	16.6	Victory	HRW	Harvey-Co	KS	67114
66	15.1	Victory	HRW	Republic-Co	KS	66935
67	11.9	Agseco-7846	HRW	Franklin-Co	KS	66067
67	16.4	Agseco-7846	HRW	Harvey-Co	KS	67114
67	11.5	Agseco-7846	HRW	Labette	KS	67350
67	12.1	Agseco-7846-Irrigated	HRW	Thomas-Co	KS	67701
67	14.8	Arapahoe	HRW	Republic-Co	KS	66935
67	13.2	Arkan	HRW	Franklin-Co	KS	66067
67	14.5	Cody	HRW	Republic-Co	KS	66935
67	13.6	Cody	HRW	Clay-Center	NE	68933
67	12.3	Cody-Dryland	HRW	Thomas-Co	KS	67701
67	12.3	Colt-Irrigated	HRW	Thomas-Co	KS	67701
67	12.5	Hawk	HRW	Geneva	NE	68361
67	18.7	Karl-Irrigated	HRW	Stafford-Co	KS	67576
67	8.6	Klasic	HWW	Merced	CA	95340
67	12.3	Larned-Dryland	HRW	Thomas-Co	KS	67701
67	13.8	Mesa	HRW	Brown-Co	KS	66434
67	11.8	Mesa	HRW	Labette	KS	67350
67	15.5	Mesa	HRW	Republic-Co	KS	66935
67	13.3	Newton	HRW	Garden-City	KS	67846
67	15.7	Newton-Dryland	HRW	Finney-Co	KS	67846
67	17.3	Norkan	HRW	Harvey-Co	KS	67114
67	12.7	Norkan-Irrigated	HRW	Thomas-Co	KS	67701
67	16.1	Pioneer-2157-Dryland	HRW	Finney-Co	KS	67846
67	12.1	Pioneer-2163	HRW	Franklin-Co	KS	66067
67	13.1	Quantum-562	HRW	Garden-City	KS	67846
67	12.8	Quantum-562	HRW	Nardin	OK	74646
67	13.8	Redland	HRW	Mead	NE	68041
67	16.9	Rio-Blanco	HWW	Harvey-Co	KS	67114
67	11.8	Thunderbird	HRW	Rosemount	MN	55068
67	11.6	Yecora-Rojo-87W	HRW	Butte-Co	CA	95965

**TABLE 6. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY HRD.**

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
68	15.8	Abilene	HRW	Republic-Co	KS	66935
68	13.8	Agseco-7805	HRW	Reno-Co	KS	67501
68	13.1	Agseco-7837-Dryland	HRW	Thomas-Co	KS	67701
68	12.7	Agseco-7846	HRW	Geneva	NE	68361
68	12.6	Bounty-206-Dryland	HRW	Thomas-Co	KS	67701
68	15.9	Bounty-WH52498	HRW	Reno-Co	KS	67501
68	13.7	Bronco-Dryland	HRW	Greeley-Co	KS	67879
68	12.7	Century	HRW	Garden-City	KS	67846
68	14.1	Colt	HRW	Brown-Co	KS	66434
68	16.9	Dodge	HRW	Republic-Co	KS	66935
68	11.5	Hawk-Irrigated	HRW	Thomas-Co	KS	67701
68	16.2	Karl	HRW	Brown-Co	KS	66434
68	16.5	Karl	HRW	Altus	OK	73521
68	16.1	Karl-Irrigated	HRW	Goodwell	OK	73939
68	12.3	Larned	HRW	Brown-Co	KS	66434
68	12.4	Larned	HRW	Franklin-Co	KS	66067
68	11.3	Newton-Irrigated	HRW	Thomas-Co	KS	67701
68	11.7	Pioneer-2172	HRW	Nardin	OK	74646
68	10.2	Redland	HRW	Sidney	NE	69162
68	13.5	Serra	HRS	Davis	CA	95616
68	13.0	Sierra	HRW	Labette	KS	67350
68	12.8	Sierra	HRW	Geneva	NE	68361
68	15.1	Siouxland	HRW	Republic-Co	KS	66935
68	13.4	Siouxland	HRW	Sidney	NE	69162
68	12.5	Stallion	HRW	Nardin	OK	74646
68	12.1	Tam-105	HRW	Nardin	OK	74646
68	11.7	Tam-107	HRW	Nardin	OK	74646
68	14.6	Tam-200	HRW	Ellis-Co	KS	67601
68	12.7	Victory	HRW	Franklin-Co	KS	66067
68	13.1	Victory-Dryland	HRW	Thomas-Co	KS	67701
69	12.7	Abilene	HRW	Franklin-Co	KS	66067
69	14.6	BH-206-Dryland	HRW	Greeley-Co	KS	67879
69	16.0	Brule	HRW	Morris	MN	56267
69	12.0	Cody	HRW	Sidney	NE	69162
69	13.8	Dodge	HRW	Nardin	OK	74646
69	16.0	Hawk	HRW	Harvey-Co	KS	67114
69	15.1	KS84HW196	HRW	Ellis-Co	KS	67601
69	12.7	Lamar-Dryland	HRW	Thomas-Co	KS	67701
69	16.4	Larned	HRW	Harvey-Co	KS	67114
69	15.3	Mesa	HRW	Ellis-Co	KS	67601
69	12.1	Mustang	HRW	Franklin-Co	KS	66067
69	12.1	Newton	HRW	Nardin	OK	74646
69	13.2	Pioneer-2157	HRW	Nardin	OK	74646
69	12.0	Quantum-562-Irrigated	HRW	Thomas-Co	KS	67701
69	14.1	Quantum-578	HRW	Geneva	NE	68361
69	11.7	Redland	HRW	Nardin	OK	74646
69	12.2	Rio-Blanco-Irrigated	HWW	Thomas-Co	KS	67701
69	16.1	Scout-66	HRW	Harvey-Co	KS	67114
69	12.1	Scout-66-Dryland	HRW	Thomas-Co	KS	67701
69	12.7	Siouxland-Dryland	HRW	Thomas-Co	KS	67701
69	13.5	Tam-200	HRW	Alliance	NE	69301

**TABLE 6. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY HRD.**

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
69	16.8	Vance	HRS	Lamberton	MN	56152
69	13.2	Victory	HRW	Geneva	NE	68361
70	13.7	Agseco-7805-Dryland	HRW	Finney-Co	KS	67846
70	13.5	Agseco-7837	HRW	Labette	KS	67350
70	13.7	Agseco-7846-Dryland	HRW	Greeley-Co	KS	67879
70	14.3	Century	HRW	Reno-Co	KS	67501
70	12.5	KS8010*-72-Exp	HRW	Labette	KS	67350
70	17.9	Karl	HRW	Harvey-Co	KS	67114
70	16.6	Karl	HRW	Reno-Co	KS	67501
70	10.2	Klasic	HWW	Sutter-Co	CA	95901
70	16.2	Mesa	HRW	Harvey-Co	KS	67114
70	13.0	Mesa-Irrigated	HRW	Finney-Co	KS	67846
70	12.4	Mesa-Irrigated	HRW	Thomas-Co	KS	67701
70	14.2	Mustang	HRW	Geneva	NE	68361
70	14.0	Norkan	HRW	Garden-City	KS	67846
70	15.5	Norkan	HRW	Republic-Co	KS	66935
70	10.4	ORCR8313	HRW	Wasco-Co	OR	97063
70	12.3	Pioneer-2172	HRW	Franklin-Co	KS	66067
70	16.8	Pioneer-2180-Irrigated	HRW	Stafford-Co	KS	67576
70	12.8	Scout-66	HRW	Franklin-Co	KS	66067
70	12.7	Tam-105	HRW	Garden-City	KS	67846
70	11.5	Tam-105	HRW	Geneva	NE	68361
70	16.7	Thunderbird	HRW	Harvey-Co	KS	67114
70	13.8	Trailblazer	HRW	Garden-City	KS	67846
70	13.5	Waco	HRW	Nardin	OK	74646
71	16.8	Abilene	HRW	Harvey-Co	KS	67114
71	13.2	Abilene	HRW	Geneva	NE	68361
71	12.2	Agseco-7805-Irrigated	HRW	Thomas-Co	KS	67701
71	17.1	BH-206	HRW	Harvey-Co	KS	67114
71	14.6	Century	HRW	Republic-Co	KS	66935
71	14.0	Century-Dryland	HRW	Greeley-Co	KS	67879
71	11.9	Hawk-Dryland	HRW	Thomas-Co	KS	67701
71	14.9	KS8010-1-4-2-Exp	HRW	Republic-Co	KS	66935
71	17.6	Karl	HRW	Ellis-Co	KS	67601
71	15.1	OK84286	HRW	Altus	OK	73521
71	15.3	Pioneer-2163	HRW	Harvey-Co	KS	67114
71	14.8	Rio-Blanco-Dryland	HWW	Greeley-Co	KS	67879
71	15.0	Sierra	HRW	Ellis-Co	KS	67601
71	13.7	Sierra	HRW	Garden-City	KS	67846
71	13.8	Sierra-Dryland	HRW	Greeley-Co	KS	67879
71	15.3	Siouxland	HRW	Ellis-Co	KS	67601
71	15.0	Siouxland	HRW	Mead	NE	68041
71	15.3	Siouxland	HRW	North-Platte	NE	69101
71	14.2	Siouxland-Irrigated	HRW	Goodwell	OK	73939
71	12.8	Tam-101	HRW	Berthoud	CO	80513
71	14.0	Tam-101	HRW	Garden-City	KS	67846
71	13.3	Tam-107	HRW	Clay-Center	NE	68933
71	16.1	Triumph-64	HRW	Ellis-Co	KS	67601
72	14.0	Agseco-7805	HRW	Ellis-Co	KS	67601
72	12.6	Arapahoe	HRW	Geneva	NE	68361
72	12.6	Bronco	HRW	Geneva	NE	68361



TABLE 6. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY HRD.

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
72	11.0	Century-Irrigated	HRW	Thomas-Co	KS	67701
72	16.2	Dodge	HRW	Brown-Co	KS	66434
72	14.2	Karl	HRW	Franklin-Co	KS	66067
72	18.4	Karl-Dryland	HRW	Finney-Co	KS	67846
72	12.6	Redland	HRW	Garden-City	KS	67846
72	13.2	Rio-Blanco	HWW	Brown-Co	KS	66434
72	13.0	Roughrider	HRW	Rosemount	MN	55068
72	10.1	Serra	HRS	Sutter-Co	CA	95901
72	13.3	Tam-107	HRW	Reno-Co	KS	67501
72	13.8	Tam-107-Dryland	HRW	Finney-Co	KS	67846
72	14.7	Thunderbird	HRW	Brown-Co	KS	66434
72	16.5	Thunderbird	HRW	Morris	MN	56267
72	13.3	Thunderbird-Dryland	HRW	Thomas-Co	KS	67701
72	12.8	Victory	HRW	Nardin	OK	74646
73	13.8	Abilene	HRW	Brown-Co	KS	66434
73	13.0	Abilene	HRW	Nardin	OK	74646
73	15.5	Agseco-7837	HRW	Ellis-Co	KS	67601
73	13.8	Arapahoe	HRW	Clay-Center	NE	68933
73	15.1	Centurk-78	HRW	North-Platte	NE	69101
73	12.8	Hawk	HRW	Garden-City	KS	67846
73	17.1	Karl	HRW	Republic-Co	KS	66935
73	11.2	Klasic	HWW	Butte-Co	CA	95965
73	14.4	Larned	HRW	Republic-Co	KS	66935
73	15.2	Mesa	HRW	Reno-Co	KS	67501
73	15.0	OK84287	HRW	Altus	OK	73521
73	14.6	Pioneer-2163	HRW	Republic-Co	KS	66935
73	8.7	Probrand-775	HRS	Merced	CA	95340
73	13.3	Scout-66	HRW	Brown-Co	KS	66434
73	14.8	Scout-66-Dryland	HRW	Finney-Co	KS	67846
73	12.6	Sierra-Irrigated	HRW	Thomas-Co	KS	67701
73	13.2	Siouxland	HRW	Geneva	NE	68361
73	14.7	Siouxland	HRW	Altus	OK	73521
73	12.5	Siouxland	HRW	Nardin	OK	74646
73	14.6	Tam-107	HRW	Harvey-Co	KS	67114
73	14.0	Waco	HRW	Garden-City	KS	67846
74	13.4	BH-206	HRW	Franklin-Co	KS	66067
74	14.5	Bounty-206	HRW	Brown-Co	KS	66434
74	12.4	Bounty-206-Irrigated	HRW	Thomas-Co	KS	67701
74	15.5	Cody	HRW	North-Platte	NE	69101
74	17.6	Norkan-Dryland	HRW	Finney-Co	KS	67846
74	12.3	ORCR8313	HRW	Pendleton	OR	97801
74	16.2	Pioneer-2180	HRW	Harvey-Co	KS	67114
74	15.1	Scout-66	HRW	Republic-Co	KS	66935
74	8.4	Serra	HRS	Merced	CA	95340
74	13.4	Siouxland	HRW	Brown-Co	KS	66434
74	15.9	Siouxland-Dryland	HRW	Finney-Co	KS	67846
74	12.5	Tam-107	HRW	Brown-Co	KS	66434
74	13.5	Tam-107	HRW	Ellis-Co	KS	67601
74	11.9	Tam-107-Dryland	HRW	Thomas-Co	KS	67701
74	12.6	Thunderbird	HRW	Berthoud	CO	80513
74	11.3	UC839	HRS	Butte-Co	CA	95965

**TABLE 6. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY HRD.**

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
74	15.5	Victory	HRW	Ellis-Co	KS	67601
74	12.9	Victory	HRW	Garden-City	KS	67846
75	13.2	Arapahoe	HRW	Garden-City	KS	67846
75	15.4	Arapahoe	HRW	Mead	NE	68041
75	13.1	Arapahoe	HRW	Nardin	OK	74646
75	12.2	Brule	HRW	Rosemount	MN	55068
75	13.4	Century	HRW	Geneva	NE	68361
75	14.8	Century-Dryland	HRW	Finney-Co	KS	67846
75	14.1	Hawk-Dryland	HRW	Greeley-Co	KS	67879
75	14.9	KS84HW196-Dryland	HRW	Greeley-Co	KS	67879
75	10.2	ORCR8313	HRW	Moro	OR	97039
75	10.1	ORCR8602	HRW	Wasco-Co	OR	97063
75	10.0	Serra	HRS	Butte-Co	CA	95965
75	13.1	Serra	HRS	Kern-Co	CA	93301
75	8.1	Tadinia	HRS	Merced	CA	95340
75	12.2	Tam-107	HRW	Garden-City	KS	67846
75	11.6	Tam-108	HRW	Berthoud	CO	80513
75	12.3	Tam-200	HRW	Nardin	OK	74646
75	15.5	Thunderbird	HRW	Ellis-Co	KS	67601
75	15.4	Thunderbird	HRW	Republic-Co	KS	66935
75	13.4	Trailblazer	HRW	Geneva	NE	68361
75	12.4	Victory-Irrigated	HRW	Thomas-Co	KS	67701
75	12.8	W84-279	HRW	Nardin	OK	74646
75	15.8	Westbred-906R	HRS	Pendleton	OR	97801
76	13.3	Arapahoe-Dryland	HRW	Thomas-Co	KS	67701
76	10.8	Brule	HRW	Alliance	NE	69301
76	11.3	Centurk-78	HRW	Alliance	NE	69301
76	11.9	Colt	HRW	Alliance	NE	69301
76	16.3	Guard	HRS	Lamberton	MN	56152
76	16.6	Mesa-Dryland	HRW	Finney-Co	KS	67846
76	13.4	Norkan	HRW	Geneva	NE	68361
76	13.4	Pioneer-2173	HRW	Garden-City	KS	67846
76	12.9	Scout-66	HRW	Labette	KS	67350
76	11.7	Tam-107	HRW	Franklin-Co	KS	66067
76	13.2	Tam-200	HRW	Garden-City	KS	67846
76	12.5	Thunderbird-Irrigated	HRW	Thomas-Co	KS	67701
77	12.5	Arapahoe-Irrigated	HRW	Thomas-Co	KS	67701
77	14.1	Baker	HRS	Kern-Co	CA	93301
77	13.5	Bounty-206-Irrigated	HRW	Finney-Co	KS	67846
77	13.7	Chisholm-Dryland	HRW	Greeley-Co	KS	67879
77	16.6	Cleopatra-3	HRW	Ellis-Co	KS	67601
77	14.4	Cody-Dryland	HRW	Greeley-Co	KS	67879
77	14.6	Larned-Dryland	HRW	Finney-Co	KS	67846
77	15.8	McKay	HRS	Madras	OR	97741
77	14.3	Mesa-Dryland	HRW	Greeley-Co	KS	67879
77	11.4	ORCR8313	HRW	Corvallis	OR	97330
77	14.2	Pioneer-2172	HRW	Brown-Co	KS	66434
77	12.9	Redland	HRW	Alliance	NE	69301
77	12.4	Rio-Blanco	HWW	Berthoud	CO	80513
77	12.6	Tam-200	HRW	Geneva	NE	68361
77	18.0	Telemark	HRS	St-Paul	MN	55101

**TABLE 6. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY HRD.**

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
77	13.6	Thunderbird	HRW	Garden-City	KS	67846
77	14.0	Thunderbird	HRW	Geneva	NE	68361
77	16.0	Vance	HRS	Langdon	ND	58249
78	14.3	Centurk-78	HRW	Mead	NE	68041
78	12.2	Cody-Irrigated	HRW	Thomas-Co	KS	67701
78	13.1	FCT'S'	HRS	Pendleton	OR	97801
78	15.1	Larned	HRW	Ellis-Co	KS	67601
78	15.4	Marshall	HRS	Minot	ND	58701
78	12.0	Mesa	HRW	Nardin	OK	74646
78	14.1	Rio-Blanco	HWW	Geneva	NE	68361
78	16.6	Rose	HRW	Morris	MN	56267
78	11.9	Siouxland-Irrigated	HRW	Thomas-Co	KS	67701
78	12.8	Trailblazer	HRW	Nardin	OK	74646
78	14.1	Tut-Dryland	HRW	Greeley-Co	KS	67879
78	16.5	Wheaton	HRS	Lamberton	MN	56152
78	10.2	Yecora-Rojo-87W	HRW	Sutter-Co	CA	95901
78	8.2	Yolo	HRS	Merced	CA	95340
79	15.8	Abilene	HRW	Ellis-Co	KS	67601
79	16.1	Arapahoe	HRW	North-Platte	NE	69101
79	16.8	Cleopatra-16	HRW	Ellis-Co	KS	67601
79	13.4	Klasic	HWW	Davis	CA	95616
79	14.3	Lamar-Dryland	HRW	Greeley-Co	KS	67879
79	12.7	Pioneer-2157	HRW	Berthoud	CO	80513
79	14.1	Pioneer-2172	HRW	Geneva	NE	68361
79	13.4	Pioneer-2180	HRW	Garden-City	KS	67846
79	10.8	Probrand-775	HRS	Butte-Co	CA	95965
79	13.5	Probrand-775	HRS	Kern-Co	CA	93301
79	15.3	Sierra-Dryland	HRW	Finney-Co	KS	67846
79	11.5	Tam-107	HRW	Labette	KS	67350
79	15.5	Tam-107	HRW	Mead	NE	68041
79	13.2	Thunderbird	HRW	Labette	KS	67350
79	14.4	Thunderbird-Dryland	HRW	Greeley-Co	KS	67879
79	16.6	Tut-Dryland	HRW	Finney-Co	KS	67846
79	10.3	Yecora-Rojo	HRS	Sutter-Co	CA	95901
80	12.8	Abilene	HRW	Berthoud	CO	80513
80	16.3	Arkan	HRW	Geneva	NE	68361
80	14.7	Century	HRW	Ellis-Co	KS	67601
80	17.3	Cleopatra-(Red)-Dryland	HRW	Finney-Co	KS	67846
80	14.1	Dodge	HRW	Berthoud	CO	80513
80	16.6	Dodge	HRW	Geneva	NE	68361
80	12.3	FCT'S'	HRS	Madras	OR	97741
80	15.8	Guard	HRS	Crookston	MN	56716
80	13.7	Karl	HRW	Berthoud	CO	80513
80	13.1	Mesa	HRW	Berthoud	CO	80513
80	16.0	Norkan-Dryland	HRW	Greeley-Co	KS	67879
80	12.2	Pioneer-2172	HRW	Labette	KS	67350
80	10.3	Probrand-775	HRS	Sutter-Co	CA	95901
80	13.3	Siouxland	HRW	Garden-City	KS	67846
80	13.9	Tam-107	HRW	Republic-Co	KS	66935
80	10.6	UC839	HRS	Sutter-Co	CA	95901
80	16.0	Vance	HRS	Crookston	MN	56716



**TABLE 6. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY HRD.**

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
80	14.8	Vance	HRS	Morris	MN	56267
80	14.7	Wheaton	HRS	Morris	MN	56267
80	9.6	Yecora-Rojo	HRS	Merced	CA	95340
81	9.5	Anza	HRS	Sutter-Co	CA	95901
81	16.7	Bounty-206-Dryland	HRW	Finney-Co	KS	67846
81	17.0	Dodge	HRW	Ellis-Co	KS	67601
81	16.1	Field	HRS	Langdon	ND	58249
81	15.7	Hawk-Dryland	HRW	Finney-Co	KS	67846
81	14.0	Klasic	HWW	Kern-Co	CA	93301
81	15.1	Mesa	HRW	Geneva	NE	68361
81	15.6	ND-653	HRS	Minot	ND	58701
81	15.9	Pioneer-2180	HRW	Republic-Co	KS	66935
81	18.1	Roughrider	HRW	Morris	MN	56267
81	15.0	Scout-66	HRW	Ellis-Co	KS	67601
81	14.8	Tam-107	HRW	North-Platte	NE	69101
81	16.4	Telemark	HRS	Stephen	MN	56757
81	15.6	Vance	HRS	Minot	ND	58701
81	10.0	Yecora-Rojo	HRS	Butte-Co	CA	95965
81	14.6	Yecora-Rojo	HRS	Davis	CA	95616
82	12.9	Abilene	HRW	Berthoud	CO	80513
82	13.1	Arkan	HRW	Berthoud	CO	80513
82	14.3	Bounty-WH52498-Dryland	HRW	Greeley-Co	KS	67879
82	15.0	Field	HRS	Minot	ND	58701
82	17.6	Guard	HRS	St-Paul	MN	55101
82	16.0	Marshall	HRS	Crookston	MN	56716
82	13.4	Norkan	HRW	Berthoud	CO	80513
82	13.6	Pioneer-2154	HRW	Garden-City	KS	67846
82	12.1	Quantum-562	HRW	Berthoud	CO	80513
82	12.7	Quantum-578	HRW	Berthoud	CO	80513
82	14.8	Stallion	HRW	Geneva	NE	68361
82	9.9	Tadinia	HRS	Sutter-Co	CA	95901
82	12.1	Tam-107	HRW	Geneva	NE	68361
82	13.7	Tam-107-Dryland	HRW	Greeley-Co	KS	67879
82	11.7	Tam-107-Irrigated	HRW	Thomas-Co	KS	67701
82	16.8	Telemark	HRS	Lamberton	MN	56152
82	13.5	Thunderbird	HRW	Nardin	OK	74646
82	16.2	Thunderbird-Dryland	HRW	Finney-Co	KS	67846
82	11.9	UC842	HRS	Merced	CA	95340
82	9.2	UC851	HWS	Merced	CA	95340
83	12.0	Agseco-7846	HRW	Berthoud	CO	80513
83	12.7	Baker	HRS	Merced	CA	95340
83	11.6	Bronco	HRW	Berthoud	CO	80513
83	14.8	Cody	HRW	Mead	NE	68041
83	17.3	Karl	HRW	Geneva	NE	68361
83	17.0	Minnpro	HRS	Langdon	ND	58249
83	17.0	ND-653	HRS	Langdon	ND	58249
83	10.9	ORCR8602	HRW	Corvallis	OR	97330
83	12.6	Pioneer-2180	HRW	Labette	KS	67350
83	12.4	Tam-107	HRW	Sidney	NE	69162
83	15.4	Telemark	HRS	Morris	MN	56267
83	12.1	UC842	HRS	Butte-Co	CA	95965

TABLE 6. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY HRD.

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
83	11.3	UC842	HRS	Sutter-Co	CA	95901
83	19.3	Vance	HRS	St-Paul	MN	55101
83	16.1	Waco	HRW	Geneva	NE	68361
83	15.6	Wheaton	HRS	Crookston	MN	56716
83	18.9	Wheaton	HRS	St-Paul	MN	55101
83	8.7	Yolo	HRS	Sutter-Co	CA	95901
84	15.3	Marshall	HRS	Morris	MN	56267
84	15.1	Marshall	HRS	Fargo	ND	58102
84	11.4	Mustang	HRW	Berthoud	CO	80513
84	12.8	Rose	HRW	Rosemount	MN	55068
84	12.9	Siouxland	HRW	Berthoud	CO	80513
84	16.3	Stoa	HRS	Langdon	ND	58249
84	11.7	Tam-105	HRW	Berthoud	CO	80513
85	14.7	Arkan-Dryland	HRW	Greeley-Co	KS	67879
85	16.3	Field	HRS	Dickinson	ND	58601
85	18.1	Marshall	HRS	St-Paul	MN	55101
85	15.0	Marshall	HRS	Langdon	ND	58249
85	18.3	Minnpro	HRS	Lamberton	MN	56152
85	11.0	ORCR8602	HRW	Moro	OR	97039
85	13.3	Pioneer-2154	HRW	Geneva	NE	68361
85	15.6	Pioneer-2172	HRW	Ellis-Co	KS	67601
85	14.8	Pioneer-2180	HRW	Reno-Co	KS	67501
85	13.1	Stallion	HRW	Berthoud	CO	80513
85	12.0	Tam-107	HRW	Berthoud	CO	80513
85	11.7	Tam-200	HRW	Berthoud	CO	80513
85	14.0	UC842	HRS	Davis	CA	95616
85	11.2	UC849	HWS	Butte-Co	CA	95965
85	12.6	Waco	HRW	Berthoud	CO	80513
86	14.6	Abilene-Dryland	HRW	Greeley-Co	KS	67879
86	9.9	Anza	HRS	Butte-Co	CA	95965
86	11.5	Baker	HRS	Sutter-Co	CA	95901
86	15.5	Butte-86	HRS	Minot	ND	58701
86	12.0	Hawk	HRW	Berthoud	CO	80513
86	16.0	Marshall	HRS	Lamberton	MN	56152
86	14.1	Marshall	HRS	Bathgate	ND	58216
86	16.2	Pioneer-2385	HRS	Langdon	ND	58249
86	11.6	Redland	HRW	Berthoud	CO	80513
86	12.1	Sierra	HRW	Berthoud	CO	80513
86	16.2	Stoa	HRS	Lamberton	MN	56152
86	15.2	Stoa	HRS	Minot	ND	58701
86	12.6	UC839	HRS	Davis	CA	95616
86	13.6	UC851	HWS	Davis	CA	95616
87	12.1	Baker	HRS	Butte-Co	CA	95965
87	14.1	Baker	HRS	Davis	CA	95616
87	14.6	Marshall	HRS	Hancock	MN	56244
87	17.2	Minnpro	HRS	Minot	ND	58701
87	12.5	Pioneer-2180	HRW	Nardin	OK	74646
87	11.6	Pioneer-2375	HRS	Frankfort	SD	57440
87	14.4	Stoa	HRS	Morris	MN	56267
87	15.0	Stoa	HRS	Stephen	MN	56757
87	10.7	UC849	HWS	Sutter-Co	CA	95901

**TABLE 6. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY HRD.**

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
87	15.0	Westbred-906R	HRS	Madras	OR	97741
87	9.2	Yecora-Rojo-87W	HRW	Merced	CA	95340
88	16.8	Celtic	HRS	Lamberton	MN	56152
88	16.7	Grandin	HRS	Langdon	ND	58249
88	16.5	Grandin	HRS	Minot	ND	58701
88	16.2	Marshall	HRS	Stephen	MN	56757
88	12.7	Pioneer-2154	HRW	Nardin	OK	74646
88	11.8	Siouxland	HRW	Alliance	NE	69301
88	12.1	Tadinia	HRS	Davis	CA	95616
88	13.2	UC839	HRS	Kern-Co	CA	93301
88	14.1	UC842	HRS	Kern-Co	CA	93301
88	10.6	UC851	HWS	Sutter-Co	CA	95901
89	10.7	Anza	HRS	Merced	CA	95340
89	14.2	Butte-86	HRS	Morris	MN	56267
89	18.9	Field	HRS	Williston	ND	58801
89	15.1	Len	HRS	Langdon	ND	58249
89	12.7	Marshall	HRS	Frankfort	SD	57440
89	12.3	Newton	HRW	Berthoud	CO	80513
89	18.7	Stoa	HRS	St-Paul	MN	55101
89	15.3	Wheaton	HRS	Stephen	MN	56757
90	12.8	Arapahoe	HRW	Berthoud	CO	80513
90	15.9	Celtic	HRS	Stephen	MN	56757
90	15.6	Field	HRS	Fargo	ND	58102
90	17.3	Len	HRS	Dickinson	ND	58601
90	16.3	Len	HRS	Minot	ND	58701
90	14.1	McKay	HRS	Pendleton	OR	97801
90	18.5	ND-653	HRS	Williston	ND	58801
90	15.4	Pioneer-2370	HRS	Hancock	MN	56244
90	16.0	Pioneer-2385	HRS	Hancock	MN	56244
90	17.1	Pioneer-2385	HRS	Minot	ND	58701
90	12.7	Trailblazer	HRW	Berthoud	CO	80513
90	15.7	Vance	HRS	Stephen	MN	56757
90	17.4	Vance	HRS	Dickinson	ND	58601
90	19.6	Vance	HRS	Williston	ND	58801
91	15.5	Celtic	HRS	Morris	MN	56267
91	14.5	Cody	HRW	Alliance	NE	69301
91	16.8	Marshall	HRS	Glenfield	ND	58443
91	20.1	Minnpro	HRS	St-Paul	MN	55101
91	16.2	ND-653	HRS	Dickinson	ND	58601
91	17.4	ND-654	HRS	Langdon	ND	58249
91	16.1	ND-654	HRS	Minot	ND	58701
91	12.9	Stoa	HRS	Frankfort	SD	57440
91	12.6	Tadinia	HRS	Kern-Co	CA	93301
91	12.5	Yolo	HRS	Kern-Co	CA	93301
92	15.0	Arapahoe	HRW	Alliance	NE	69301
92	14.3	Len	HRS	Bathgate	ND	58216
92	15.0	Len	HRS	Frankfort	SD	57440
92	17.3	Pioneer-2369	HRS	Lamberton	MN	56152
92	10.4	UC851	HWS	Butte-Co	CA	95965
92	14.4	Yecora-Rojo	HRS	Kern-Co	CA	93301
93	17.8	Butte-86	HRS	St-Paul	MN	55101



TABLE 6. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY HRD.

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
93	15.8	Butte-86	HRS	Stephen	MN	56757
93	11.9	Century	HRW	Berthoud	CO	80513
93	16.0	Gus	HRS	Minot	ND	58701
93	16.5	ND-653	HRS	Fargo	ND	58102
93	15.0	Pioneer-2369	HRS	Morris	MN	56267
93	14.5	Pioneer-2385	HRS	Bathgate	ND	58216
93	14.6	Pioneer-2385	HRS	Frankfort	SD	57440
93	10.6	Yolo	HRS	Butte-Co	CA	95965
94	11.4	Batum	HRW	Pendleton	OR	97801
94	16.6	Butte-86	HRS	Lamberton	MN	56152
94	16.0	Celtic	HRS	Crookston	MN	56716
94	17.1	Gus	HRS	Langdon	ND	58249
94	16.9	Marshall	HRS	Dickinson	ND	58601
94	16.9	ND-654	HRS	Dickinson	ND	58601
94	13.1	Pioneer-2370	HRS	Frankfort	SD	57440
94	19.0	Pioneer-2385	HRS	Williston	ND	58801
94	14.3	Stoa	HRS	Bathgate	ND	58216
94	16.0	Stoa	HRS	Fargo	ND	58102
95	16.5	Len	HRS	Fargo	ND	58102
95	19.9	Len	HRS	Williston	ND	58801
95	17.3	Minnpro	HRS	Stephen	MN	56757
95	11.8	Pioneer-2172	HRW	Berthoud	CO	80513
95	13.7	Pioneer-2370	HRS	Bathgate	ND	58216
95	17.6	Pioneer-2385	HRS	Glenfield	ND	58443
95	13.5	Tam-107	HRW	Alliance	NE	69301
95	15.8	Vance	HRS	Fargo	ND	58102
95	12.0	Yolo	HRS	Davis	CA	95616
96	15.0	Butte-86	HRS	Bathgate	ND	58216
96	16.6	Butte-86	HRS	Dickinson	ND	58601
96	17.2	Butte-86	HRS	Langdon	ND	58249
96	17.9	Len	HRS	Glenfield	ND	58443
96	18.6	ND-654	HRS	Williston	ND	58801
96	11.2	ORCR8602	HRW	Pendleton	OR	97801
96	17.4	Pioneer-2385	HRS	Dickinson	ND	58601
96	16.3	Stoa	HRS	Crookston	MN	56716
96	16.7	Telemark	HRS	Crookston	MN	56716
96	13.1	Victory	HRW	Berthoud	CO	80513
97	18.2	Celtic	HRS	St-Paul	MN	55101
97	17.4	ND-650	HRS	Minot	ND	58701
97	11.5	Pioneer-2154	HRW	Berthoud	CO	80513
97	16.5	Pioneer-2180	HRW	Geneva	NE	68361
97	18.6	Pioneer-2369	HRS	St-Paul	MN	55101
97	16.4	Pioneer-2369	HRS	Stephen	MN	56757
97	14.3	Pioneer-2375	HRS	Bathgate	ND	58216
98	17.5	Grandin	HRS	Dickinson	ND	58601
98	16.6	Grandin	HRS	Fargo	ND	58102
98	16.1	Len	HRS	Hancock	MN	56244
98	17.1	Pioneer-2369	HRS	Crookston	MN	56716
98	14.0	Pioneer-2369	HRS	Bathgate	ND	58216
98	16.0	Stoa	HRS	Hancock	MN	56244
98	17.1	Stoa	HRS	Dickinson	ND	58601

TABLE 6. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY HRD.

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
98	13.9	UC849	HWS	Kern-Co	CA	93301
98	14.2	Yecora-Rojo-87W	HRW	Kern-Co	CA	93301
99	16.4	Butte-86	HRS	Crookston	MN	56716
99	16.6	Butte-86	HRS	Fargo	ND	58102
99	17.7	Gus	HRS	Dickinson	ND	58601
99	19.0	Minnpro	HRS	Crookston	MN	56716
99	16.9	Minnpro	HRS	Morris	MN	56267
99	18.3	Minnpro	HRS	Dickinson	ND	58601
99	17.0	Minnpro	HRS	Fargo	ND	58102
99	16.9	ND-652	HRS	Minot	ND	58701
99	17.1	ND-654	HRS	Fargo	ND	58102
99	15.8	Pioneer-2375	HRS	Glenfield	ND	58443
99	18.9	Stoa	HRS	Williston	ND	58801
99	12.7	UC849	HWS	Merced	CA	95340
100	13.9	Butte-86	HRS	Frankfort	SD	57440
100	16.2	Gus	HRS	Fargo	ND	58102
100	19.3	ND-652	HRS	Williston	ND	58801
100	18.1	Pioneer-2370	HRS	Glenfield	ND	58443
100	16.5	Pioneer-2385	HRS	Casselton	ND	58012
100	10.1	Tadinia	HRS	Butte-Co	CA	95965
100	13.5	Yecora-Rojo-87W	HRW	Davis	CA	95616
101	12.5	Anza	HRS	Davis	CA	95616
101	18.9	Marshall	HRS	Williston	ND	58801
101	21.1	Minnpro	HRS	Williston	ND	58801
101	18.2	ND-652	HRS	Dickinson	ND	58601
102	15.8	Amidon	HRS	Langdon	ND	58249
102	16.4	Butte-86	HRS	Hancock	MN	56244
102	14.3	UC849	HWS	Davis	CA	95616
103	16.8	Butte-86	HRS	Glenfield	ND	58443
103	19.2	Grandin	HRS	Williston	ND	58801
103	15.9	Marshall	HRS	Casselton	ND	58012
103	16.7	ND-652	HRS	Fargo	ND	58102
103	13.0	Pioneer-2369	HRS	Frankfort	SD	57440
103	16.6	Pioneer-2370	HRS	Casselton	ND	58012
103	16.3	Stoa	HRS	Casselton	ND	58012
103	17.3	Stoa	HRS	Glenfield	ND	58443
104	15.9	Pioneer-2369	HRS	Glenfield	ND	58443
104	15.9	Pioneer-2375	HRS	Casselton	ND	58012
105	19.5	Butte-86	HRS	Williston	ND	58801
105	17.8	ND-650	HRS	Langdon	ND	58249
105	17.4	ND-652	HRS	Langdon	ND	58249
105	15.6	Pioneer-2369	HRS	Hancock	MN	56244
105	12.9	UC851	HWS	Kern-Co	CA	93301
106	12.7	Pioneer-2180	HRW	Berthoud	CO	80513
107	12.5	Anza	HRS	Kern-Co	CA	93301
107	20.1	Gus	HRS	Williston	ND	58801
107	15.3	Pioneer-2375	HRS	Hancock	MN	56244
108	15.9	Amidon	HRS	Dickinson	ND	58601
108	16.4	Butte-86	HRS	Casselton	ND	58012
108	18.1	ND-650	HRS	Dickinson	ND	58601
109	17.1	Len	HRS	Casselton	ND	58012

TABLE 6. HARDNESS AND PROTEIN(12% MC) OF '89 BREEDERS' SAMPLES, BY HRD.

HRD.	PRO.	VARIETY	CLASS	REGION	STATE	ZIPCODE
109	17.1	Pioneer-2385	HRS	Fargo	ND	58102
110	16.5	Amidon	HRS	Minot	ND	58701
110	17.0	ND-650	HRS	Fargo	ND	58102
113	15.8	Amidon	HRS	Fargo	ND	58102
113	20.2	ND-650	HRS	Williston	ND	58801
113	16.0	Pioneer-2369	HRS	Casselton	ND	58012
114	18.9	Amidon	HRS	Williston	ND	58801



TABLE 7. AVERAGE HARDNESS AND PROTEIN OF ALL SAMPLES FOR EACH VARIETY.

VARIETY	CLASS	STATE	N	PROTEIN (12% MC)		HARDNESS	
				MEAN	STD.	MEAN	STD.
Abilene	HRW	CO	2	12.8	0.1	81	1
Abilene	HRW	KS	14	14.0	1.4	70	8
Abilene	HRW	NE	3	13.9	1.8	69	9
Abilene	HRW	OK	1	13.0	.	73	.
Abilene-Dryland	HRW	KS	3	15.0	1.8	69	15
Abilene-Irrigated	HRW	KS	3	13.2	0.8	61	6
Abilene-Shawnee	Mix	KS	1	13.0	.	77	.
Agassiz	HRW	MT	1	11.4	.	71	.
Agseco-7805	HRW	KS	3	13.9	0.1	68	4
Agseco-7805-Dryland	HRW	KS	2	13.0	1.0	65	8
Agseco-7805-Irrigated	HRW	KS	2	12.9	1.0	68	5
Agseco-7833	HRW	KS	3	15.1	0.8	61	3
Agseco-7837	HRW	KS	7	14.8	1.6	65	6
Agseco-7837-Dryland	HRW	KS	2	14.4	1.9	66	3
Agseco-7837-Irrigated	HRW	KS	4	13.9	1.9	56	2
Agseco-7846	HRW	CO	1	12.0	.	83	.
Agseco-7846	HRW	KS	8	13.7	1.7	62	6
Agseco-7846	HRW	NE	1	12.7	.	68	.
Agseco-7846	HRW	OK	1	11.5	.	56	.
Agseco-7846-Dryland	HRW	KS	3	14.0	1.8	59	9
Agseco-7846-Irrigated	HRW	KS	4	13.7	1.6	56	7
Agseco-7853-Irrigated	HRW	KS	2	15.3	1.6	52	7
Alex	HRS	ND	2	14.4	0.8	103	6
Amidon	HRS	ND	5	16.6	1.3	109	5
Anza	HRS	CA	5	11.0	1.4	93	11
Anza	HRW	CA	7	12.5	1.8	76	9
Anza-Hi	HRW	CA	1	11.2	.	84	.
Arapahoe	HRW	CO	1	12.8	.	90	.
Arapahoe	HRW	KS	2	14.0	1.1	71	5
Arapahoe	HRW	NE	8	14.1	1.7	73	9
Arapahoe	HRW	OK	1	13.1	.	75	.
Arapahoe-Dryland	HRW	KS	1	13.3	.	76	.
Arapahoe-Irrigated	HRW	KS	2	12.9	0.5	71	7
Arkan	HRW	CO	1	13.1	.	82	.
Arkan	HRW	KS	24	14.1	1.4	57	10
Arkan	HRW	NE	1	16.3	.	80	.
Arkan	HRW	OK	1	12.5	.	63	.
Arkan-Dryland	HRW	KS	2	14.2	0.6	71	19
Arkan-Irrigated	HRW	KS	3	13.2	0.4	60	3
Augusta	SWW	MI	18	10.7	0.6	27	6
BH-206	HRW	KS	2	15.2	2.7	72	2
BH-206-Dryland	HRW	KS	1	14.6	.	69	.
Baker	HRS	CA	5	12.9	1.2	84	4
Barbee	Club	WA	1	10.5	.	25	.
Basin-Fall	SWW	ID	1	10.5	.	6	.
Batum	HRW	OR	3	11.0	0.7	74	18
Becker	SRW	KS	2	11.8	0.7	18	1
Becker	SRW	OH	10	10.1	0.6	17	8
Beordless		KS	1	11.4	.	63	.

TABLE 7. AVERAGE HARDNESS AND PROTEIN OF ALL SAMPLES FOR EACH VARIETY.

VARIETY	CLASS	STATE	N	PROTEIN (12% MC)		HARDNESS	
				MEAN	STD.	MEAN	STD.
Bliss	SWW	ID	1	10.9	.	25	.
Bliss-Dirkwin	Mix	WA	1	10.6	.	15	.
Bounty-205	HRW	CO	1	11.8	.	58	.
Bounty-205	HRW	KS	1	13.3	.	45	.
Bounty-205	HRW	NE	1	12.9	.	52	.
Bounty-205	HRW	OK	1	12.9	.	50	.
Bounty-206	HRW	KS	3	14.6	1.5	68	5
Bounty-206-Dryland	HRW	KS	2	14.7	2.9	75	10
Bounty-206-Irrigated	HRW	KS	3	14.6	2.9	71	8
Bounty-WH52498	HRW	KS	4	15.4	1.5	63	4
Bounty-WH52498-Dryland	HRW	KS	2	13.8	0.6	70	18
Bounty-WH52498-Exp-Dryland	HRW	KS	1	17.2	.	63	.
Bounty-WH52498-Irrigated	HRW	KS	2	13.3	0.8	63	3
Bronco	HRW	CO	1	11.6	.	83	.
Bronco	HRW	KS	5	14.6	1.4	60	4
Bronco	HRW	NE	1	12.6	.	72	.
Bronco-Dryland	HRW	KS	3	13.4	1.3	61	6
Brule	HRW	MN	2	14.1	2.7	72	4
Brule	HRW	NE	8	13.0	1.6	65	6
Buckskin	HRW	NE	2	14.2	2.6	66	4
Butte	HRS	ND	3	15.7	0.1	103	3
Butte	HRS	SD	1	14.7	.	93	.
Butte-86	HRS	MN	15	16.2	1.0	97	5
Butte-86	HRS	ND	21	16.2	1.4	98	9
Butte-86	HRS	SD	5	15.0	0.8	96	4
Caldwell	SRW	KS	7	11.2	0.9	19	7
Caldwell	SRW	MI	5	11.0	0.7	18	3
Caldwell	SRW	MO	19	11.6	1.2	25	5
Caldwell	SRW	OH	11	10.6	0.7	22	5
Caldwell/Cardinal	Mix	OH	1	11.3	.	18	.
Cardinal	SRW	KS	3	12.5	0.3	26	5
Cardinal	SRW	MO	4	10.7	0.5	24	8
Cardinal	SRW	OH	9	10.2	0.4	21	5
Cardinal	SRW	PA	1	11.5	.	23	.
Cardinal	SRW	WA	1	10.6	.	28	.
Cargill-Bounty	Mix	MO	1	11.3	.	62	.
Carson-Dryland	HRW	KS	1	12.3	.	66	.
Cashup	SWW	WA	3	11.0	0.3	20	2
Celtic	HRS	MN	5	16.5	1.1	92	3
Centura	HRW	NE	4	14.0	1.1	74	6
Centurk	HRW	NE	1	11.4	.	69	.
Centurk-78	HRW	NE	5	13.2	1.5	68	11
Century	HRW	CO	1	11.9	.	93	.
Century	HRW	KS	9	13.5	1.2	65	8
Century	HRW	NE	1	13.4	.	75	.
Century	HRW	OK	1	12.0	.	61	.
Century-Dryland	HRW	KS	3	13.8	1.2	70	6
Century-Irrigated	HRW	KS	4	12.8	1.7	62	8
Cert-Marshall	Mix	MN	1	15.3	.	91	.

TABLE 7. AVERAGE HARDNESS AND PROTEIN OF ALL SAMPLES FOR EACH VARIETY.

VARIETY	CLASS	STATE	N	PROTEIN (12% MC)		HARDNESS	
				MEAN	STD.	MEAN	STD.
Chilsolm	HRW	OK	1	12.3	.	43	.
Chisholm	HRW	CO	1	12.9	.	63	.
Chisholm	HRW	KS	5	12.9	1.2	48	3
Chisholm	HRW	NE	1	15.2	.	53	.
Chisholm	HRW	OK	46	12.0	1.1	48	8
Chisholm-Dryland	HRW	KS	1	13.7	.	77	.
Chisholm-Irrigated	HRW	KS	1	13.0	.	37	.
Chisholm-Irrigated	HRW	OK	1	14.8	.	43	.
Cleopatra-(Red)-Dryland	HRW	KS	1	17.3	.	80	.
Cleopatra-16	HRW	KS	1	16.8	.	79	.
Cleopatra-3	HRW	KS	1	16.6	.	77	.
Cody	HRW	KS	1	14.5	.	67	.
Cody	HRW	NE	8	14.6	1.3	75	8
Cody-Dryland	HRW	KS	2	13.4	1.5	72	7
Cody-Irrigated	HRW	KS	1	12.2	.	78	.
Colt	HRW	KS	2	14.5	0.7	63	8
Colt	HRW	NE	7	14.3	1.6	56	10
Colt-Dryland	HRW	KS	1	12.7	.	53	.
Colt-Irrigated	HRW	KS	2	12.7	0.6	60	10
Crew	Club	OR	1	9.7	.	29	.
Crew-Tres	Mix	WA	1	11.3	.	28	.
Daws	SWW	ID	1	9.1	.	31	.
Daws	SWW	WA	14	10.9	1.1	28	5
Daws-Stephens	Mix	WA	2	11.7	0.4	20	9
Dodge	HRW	CO	1	14.1	.	80	.
Dodge	HRW	KS	8	15.8	1.7	65	9
Dodge	HRW	NE	1	16.6	.	80	.
Dodge	HRW	OK	1	13.8	.	69	.
Dodge-Dryland	HRW	KS	1	14.8	.	65	.
Dodge-Irrigated	HRW	KS	4	14.7	1.0	57	5
Dusty	SWW	ID	1	9.5	.	11	.
Dusty	SWW	WA	6	10.9	1.4	21	3
Dusty-Stephens	Mix	ID	1	10.3	.	25	.
Dynasty	SRW	OH	5	10.7	0.9	21	8
Eagle	HRW	KS	2	12.4	1.7	72	10
Edwall	SWW	ID	4	10.2	0.2	20	4
Edwall	SWW	WA	7	12.3	1.9	21	5
FCT'S'	HRS	OR	2	12.7	0.6	79	1
FS402/GR876	Mix	OH	1	11.1	.	16	.
Field	HRS	ND	5	16.4	1.5	86	4
Fielder	SWW	WA	1	12.7	.	22	.
Fieldwin	SWW	WA	1	13.7	.	22	.
Frankenmuth	SWW	MI	18	11.0	0.8	26	5
Grandin	HRS	ND	5	17.3	1.1	95	7
Guard	HRS	MN	3	16.6	0.9	79	3
Guard	HRS	SD	9	13.6	1.0	69	13
Gus	HRS	ND	5	17.4	1.7	98	6
Hancock	SRW	KS	2	12.9	1.1	45	25
Hart	SRW	OH	1	10.3	.	13	.



TABLE 7. AVERAGE HARDNESS AND PROTEIN OF ALL SAMPLES FOR EACH VARIETY.

VARIETY	CLASS	STATE	N	PROTEIN (12% MC)		HARDNESS	
				MEAN	STD.	MEAN	STD.
Hawk	HRW	CO	1	12.0	.	86	.
Hawk	HRW	KS	7	13.3	2.1	66	10
Hawk	HRW	MT	2	14.2	1.2	71	2
Hawk	HRW	NE	2	13.3	1.2	72	7
Hawk	HRW	OK	1	12.1	.	66	.
Hawk-Dryland	HRW	KS	3	13.9	1.9	76	5
Hawk-Irrigated	HRW	KS	3	12.5	0.9	62	6
Hill	SWW	ID	2	11.0	0.6	32	0
Hill	SWW	OR	3	9.5	0.5	31	5
Hill-81	SWW	ID	7	10.7	0.8	28	7
Hill-81	SWW	OR	2	10.6	0.4	30	5
Hill-81	SWW	WA	15	11.4	1.1	24	6
Hill-81-Edward	Mix	WA	1	11.5	.	13	.
Hillsdale	SRW	OH	2	10.3	0.2	20	2
Horns-20		OH	1	10.1	.	23	.
Huntsman		WA	1	11.1	.	29	.
Hyak	SWW	WA	4	10.9	1.2	38	4
Hyslop	SWW	ID	1	9.7	.	19	.
KS8010*-72-Exp	HRW	KS	4	14.7	1.6	66	3
KS8010*-72-Exp-Irrigated	HRW	KS	1	16.4	.	58	.
KS8010-1-4-2-Exp	HRW	KS	4	14.9	1.6	65	5
KS8010-1-4-2-Exp-Irrigated	HRW	KS	1	16.5	.	53	.
KS84HW196	HRW	KS	2	15.0	0.2	66	4
KS84HW196-Dryland	HRW	KS	3	14.5	1.6	68	6
KS84HW196-Irrigated	HRW	KS	4	13.5	1.2	57	7
Karl	HRW	CO	1	13.7	.	80	.
Karl	HRW	KS	8	15.9	1.7	68	5
Karl	HRW	NE	1	17.3	.	83	.
Karl	HRW	OK	5	15.0	1.2	59	8
Karl-Dryland	HRW	KS	2	16.8	2.3	69	4
Karl-Irrigated	HRW	KS	4	15.0	2.5	60	6
Karl-Irrigated	HRW	OK	1	16.1	.	68	.
Klasic	HWW	CA	8	11.8	1.8	67	11
Lamar-Dryland	HRW	KS	2	13.5	1.1	74	7
Larned	HRW	KS	16	13.2	1.9	73	10
Larned-Dryland	HRW	KS	2	13.5	1.6	72	7
Leaded		MI	1	10.8	.	23	.
Len	HRS	MN	2	16.1	0.0	94	6
Len	HRS	ND	18	16.5	1.2	95	5
Len	HRS	SD	1	15.0	.	92	.
Lewjain	SWW	ID	4	9.8	1.7	23	2
Lewjain	SWW	WA	19	11.1	1.2	24	6
Lewjain-Edwall	Mix	WA	2	12.9	0.8	24	4
Lincoln	SRW	KS	3	12.0	1.2	24	5
Luke-WA7529	Mix	WA	1	10.4	.	26	.
MBS-8625	HRW	KS	1	16.0	.	64	.
MBS-8625-Irrigated	HRW	KS	1	12.8	.	59	.
MBS-8645	HRW	KS	2	14.6	1.6	61	7
MBS-8645-Exp	HRW	KS	1	13.1	.	63	.

TABLE 7. AVERAGE HARDNESS AND PROTEIN OF ALL SAMPLES FOR EACH VARIETY.

VARIETY	CLASS	STATE	N	PROTEIN (12% MC)		HARDNESS	
				MEAN	STD.	MEAN	STD.
MBS-8645-Irrigated	HRW	KS	2	15.1	2.1	53	1
Madsen	SWW	OR	4	10.1	1.5	31	2
Madsen	SWW	WA	5	11.4	1.6	32	6
Malcolm	SWW	OR	4	9.8	1.3	29	6
Malcolm	SWW	WA	4	10.8	1.0	33	3
Marshall	HRS	MN	33	15.6	1.4	88	9
Marshall	HRS	ND	15	15.6	1.5	86	9
Marshall	HRS	SD	1	12.7	.	89	.
McKay	HRS	OR	2	14.9	1.2	84	9
Merchman-Kate		MO	1	11.9	.	18	.
Mesa	HRW	CO	1	13.1	.	80	.
Mesa	HRW	KS	11	13.7	1.7	64	9
Mesa	HRW	NE	1	15.1	.	81	.
Mesa	HRW	OK	11	13.7	2.0	76	13
Mesa-Cassidy	Mix	OK	1	14.6	.	94	.
Mesa-Dryland	HRW	KS	3	14.7	1.8	73	7
Mesa-Irrigated	HRW	KS	3	12.7	0.3	64	11
Minnpro	HRS	MN	5	18.3	1.3	94	6
Minnpro	HRS	ND	5	18.1	1.8	94	8
Moro	Club	WA	4	10.4	0.6	23	1
Mustang	HRW	CO	1	11.4	.	84	.
Mustang	HRW	KS	6	14.3	1.7	71	15
Mustang	HRW	NE	1	14.2	.	70	.
Mustang	HRW	OK	1	12.2	.	64	.
Mustang-Irrigated	HRW	KS	1	16.0	.	59	.
ND-650	HRS	ND	5	18.1	1.2	107	6
ND-652	HRS	ND	5	17.7	1.1	102	2
ND-653	HRS	ND	5	16.8	1.1	87	5
ND-654	HRS	ND	5	17.2	0.9	94	3
Neeley	HRW	MT	5	12.3	1.3	64	6
Newton	HRW	CO	1	12.3	.	89	.
Newton	HRW	KS	24	13.6	1.5	66	12
Newton	HRW	NE	1	12.5	.	60	.
Newton	HRW	OK	1	12.1	.	69	.
Newton-Dryland	HRW	KS	3	13.9	1.8	62	5
Newton-Irrigated	HRW	KS	4	13.1	1.5	56	10
Norkan	HRW	CO	1	13.4	.	82	.
Norkan	HRW	KS	8	14.5	1.5	65	5
Norkan	HRW	NE	1	13.4	.	76	.
Norkan	HRW	OK	1	13.2	.	64	.
Norkan-Dryland	HRW	KS	3	15.8	2.0	73	7
Norkan-Irrigated	HRW	KS	3	13.5	0.7	60	8
Norseman	HRS	MN	1	14.9	.	86	.
Norstar	HRW	MT	2	12.9	2.3	64	8
Norwin	HRW	MT	2	11.4	0.0	83	3
Nugaines	SWW	WA	4	10.8	1.5	28	3
OK84284	HRW	OK	1	14.0	.	52	.
OK84286	HRW	OK	4	14.0	0.9	63	6
OK84286-Irrigated	HRW	OK	1	14.4	.	62	.

TABLE 7. AVERAGE HARDNESS AND PROTEIN OF ALL SAMPLES FOR EACH VARIETY.

VARIETY	CLASS	STATE	N	PROTEIN (12% MC)		HARDNESS	
				MEAN	STD.	MEAN	STD.
OK84287	HRW	OK	3	14.3	0.7	65	8
OK84287-Irrigated	HRW	OK	1	14.3	.	64	.
OK86215	HRW	OK	4	14.4	0.6	55	8
OK86215-Irrigated	HRW	OK	1	15.3	.	61	.
OK86223	HRW	OK	4	14.1	0.8	48	5
OK86223-Irrigated	HRW	OK	1	14.4	.	55	.
OK87542	HRW	OK	4	13.8	1.0	48	6
OK87542-Irrigated	HRW	OK	1	14.3	.	51	.
OK87575	HRW	OK	4	13.6	1.1	54	4
OK87575-Irrigated	HRW	OK	1	14.1	.	62	.
OK87630	HRW	OK	4	13.5	0.5	45	6
OK87630-Irrigated	HRW	OK	1	15.6	.	51	.
OK87W663	HRW	OK	4	13.4	1.1	48	4
OK87W663-Irrigated	HRW	OK	1	14.2	.	48	.
OR83801	SWW	OR	4	11.0	0.7	28	9
ORCR8313	HRW	OR	4	11.1	1.0	74	3
ORCR8602	HRW	OR	4	10.8	0.5	85	9
OSU-21	SWW	OR	3	10.0	0.5	39	13
Olso	HRS	MN	1	15.2	.	60	.
Owens	SWW	ID	1	10.7	.	15	.
Owens	SWW	WA	5	13.2	0.7	20	3
Owens-Tres	Mix	WA	1	12.5	.	23	.
Penawawa	SWW	ID	1	11.3	.	19	.
Penawawa	SWW	WA	3	12.4	0.8	18	1
Penawawa-Lewjain	Mix	WA	1	11.9	.	22	.
Pike	SRW	MO	2	10.9	0.5	12	3
Pioneer-2127		OK	2	12.0	1.3	67	1
Pioneer-2154	HRW	CO	1	11.5	.	97	.
Pioneer-2154	HRW	KS	1	13.6	.	82	.
Pioneer-2154	HRW	NE	1	13.3	.	85	.
Pioneer-2154	HRW	OK	1	12.7	.	88	.
Pioneer-2157	HRW	CO	1	12.7	.	79	.
Pioneer-2157	HRW	KS	11	14.6	1.3	56	5
Pioneer-2157	HRW	NE	1	13.5	.	61	.
Pioneer-2157	HRW	OK	45	12.8	1.4	62	9
Pioneer-2157-Dryland	HRW	KS	2	15.5	0.9	65	4
Pioneer-2157-Irrigated	HRW	KS	3	14.2	2.1	49	10
Pioneer-2163	HRW	KS	7	13.7	1.1	65	5
Pioneer-2163-Dryland	HRW	KS	2	13.7	1.7	62	3
Pioneer-2163-Irrigated	HRW	KS	3	12.6	0.3	60	2
Pioneer-2167	HRW	OK	2	11.3	0.2	56	3
Pioneer-2172	HRW	CO	1	11.8	.	95	.
Pioneer-2172	HRW	KS	4	13.6	1.6	78	6
Pioneer-2172	HRW	NE	1	14.1	.	79	.
Pioneer-2172	HRW	OK	1	11.7	.	68	.
Pioneer-2173	HRW	KS	1	13.4	.	76	.
Pioneer-2180	HRW	CO	1	12.7	.	106	.
Pioneer-2180	HRW	KS	5	14.6	1.6	80	4
Pioneer-2180	HRW	NE	1	16.5	.	97	.



TABLE 7. AVERAGE HARDNESS AND PROTEIN OF ALL SAMPLES FOR EACH VARIETY.

VARIETY	CLASS	STATE	N	PROTEIN (12% MC)		HARDNESS	
				MEAN	STD.	MEAN	STD.
Pioneer-2180	HRW	OK	3	12.8	1.0	89	6
Pioneer-2180-Irrigated	HRW	KS	1	16.8	.	70	.
Pioneer-2251		MO	1	12.1	.	20	.
Pioneer-2305		MN	1	17.4	.	96	.
Pioneer-2369	HRS	MN	7	16.4	1.4	95	6
Pioneer-2369	HRS	ND	4	15.4	0.9	102	8
Pioneer-2369	HRS	SD	1	13.0	.	103	.
Pioneer-2370	HRS	MN	1	15.4	.	90	.
Pioneer-2370	HRS	ND	3	16.1	2.3	99	4
Pioneer-2370	HRS	SD	1	13.1	.	94	.
Pioneer-2375	HRS	MN	1	15.3	.	107	.
Pioneer-2375	HRS	ND	3	15.3	0.9	100	3
Pioneer-2375	HRS	SD	1	11.6	.	87	.
Pioneer-2385	HRS	MN	1	16.0	.	90	.
Pioneer-2385	HRS	ND	8	16.9	1.3	95	7
Pioneer-2385	HRS	SD	1	14.6	.	93	.
Pioneer-2550	SRW	OH	1	10.3	.	14	.
Pioneer-2551	SRW	KS	3	12.7	0.5	25	4
Pioneer-2551	SWW	KS	1	13.4	.	22	.
Pioneer-2551	SRW	MO	2	11.0	0.2	12	8
Pioneer-2553	SRW	MO	1	10.6	.	12	.
Pioneer-2555	SRW	MO	3	12.4	2.2	25	5
Pioneer-906R	Mix	MN	1	17.5	.	78	.
Plainsman	HRW	KS	1	14.9	.	58	.
Pony	HRW	OK	1	10.4	.	41	.
Probrand-775	HRS	CA	5	11.6	2.5	75	6
Quantum-561	HRW	KS	2	14.9	0.5	48	9
Quantum-562	HRW	CO	1	12.1	.	82	.
Quantum-562	HRW	KS	3	14.3	1.1	62	6
Quantum-562	HRW	OK	1	12.8	.	67	.
Quantum-562-Dryland	HRW	KS	3	14.2	1.9	64	2
Quantum-562-Irrigated	HRW	KS	3	12.8	0.7	59	9
Quantum-567	HRW	NE	1	11.6	.	59	.
Quantum-574	HRW	KS	4	15.2	1.7	51	5
Quantum-578	HRW	CO	1	12.7	.	82	.
Quantum-578	HRW	KS	1	13.2	.	63	.
Quantum-578	HRW	NE	1	14.1	.	69	.
Quantum-578	HRW	OK	1	12.7	.	64	.
Quantum-578-Irrigated	HRW	KS	3	13.1	0.5	53	4
Quantun-574	HRW	KS	1	13.5	.	50	.
Redland	HRW	CO	1	11.6	.	86	.
Redland	HRW	KS	2	12.2	0.6	68	6
Redland	HRW	NE	13	12.8	1.4	62	6
Redland	HRW	OK	1	11.7	.	69	.
Redland-Dryland	HRW	KS	2	13.3	2.0	64	4
Redskin	HRW	MT	1	13.8	.	56	.
Redwin	HRW	MT	2	14.2	0.3	77	2
Rio-Blanco	HWW	CO	1	12.4	.	77	.
Rio-Blanco	HWW	KS	8	14.2	1.6	63	5

TABLE 7. AVERAGE HARDNESS AND PROTEIN OF ALL SAMPLES FOR EACH VARIETY.

VARIETY	CLASS	STATE	N	PROTEIN (12% MC)		HARDNESS	
				MEAN	STD.	MEAN	STD.
Rio-Blanco	HWW	NE	1	14.1	.	78	.
Rio-Blanco	HWW	OK	1	12.2	.	61	.
Rio-Blanco-Dryland	HWW	KS	2	13.8	1.4	64	9
Rio-Blanco-Irrigated	HWW	KS	3	13.1	0.8	58	9
Rose	HRW	MN	2	14.7	2.7	81	4
Roughrider	HRW	MN	2	15.5	3.7	77	6
Scotty	SRW	OH	1	9.9	.	12	.
Scout-66	HRW	KS	7	14.3	1.3	72	5
Scout-66	HRW	NE	1	14.2	.	73	.
Scout-66-Dryland	HRW	KS	2	13.5	2.0	71	3
Serra	HRS	CA	5	11.0	2.2	73	3
Shawnee-Arkan	Mix	KS	1	11.6	.	45	.
Shawnee-Tam-107	Mix	KS	1	12.0	.	82	.
Shield	HRS	MN	1	15.4	.	84	.
Sierra	HRW	CO	1	12.1	.	86	.
Sierra	HRW	KS	8	14.4	1.1	65	5
Sierra	HRW	NE	1	12.8	.	68	.
Sierra-Dryland	HRW	KS	3	13.9	1.3	71	8
Sierra-Irrigated	HRW	KS	3	13.1	0.4	68	5
Siouxland	HRW	CO	1	12.9	.	84	.
Siouxland	HRW	KS	9	14.3	1.4	69	6
Siouxland	HRW	NE	10	13.6	1.2	69	8
Siouxland	HRW	OK	5	13.7	1.1	64	8
Siouxland-Dryland	HRW	KS	2	14.3	2.3	72	3
Siouxland-Irrigated	HRW	KS	4	13.7	2.2	59	14
Siouxland-Irrigated	HRW	OK	1	14.2	.	71	.
Sprague	SWW	WA	9	11.2	0.5	23	2
Sprague-Daws	Mix	WA	4	10.2	0.1	24	1
Sprague-Johns	Mix	WA	1	10.9	.	16	.
Stallion	HRW	CO	1	13.1	.	85	.
Stallion	HRW	KS	2	12.6	0.9	55	3
Stallion	HRW	NE	1	14.8	.	82	.
Stallion	HRW	OK	14	12.9	0.9	67	8
Star-Seed-830	HRW	KS	1	14.1	.	62	.
Stephens	SWW	ID	27	11.1	0.8	26	5
Stephens	SWW	MS	3	11.5	0.3	28	6
Stephens	SWW	OR	9	10.4	0.7	32	6
Stephens	SWW	WA	15	11.7	1.0	28	6
Stephens-Hill	Mix	WA	1	10.4	.	23	.
Stoa	HRS	MN	7	15.9	1.5	90	5
Stoa	HRS	ND	25	16.3	1.7	96	9
Stoa	HRS	SD	1	12.9	.	91	.
Stokay	HRW	CA	1	12.9	.	86	.
TFS-7846		KS	1	12.4	.	62	.
Tadinia	HRS	CA	6	10.8	1.8	86	9
Tam-101	HRW	CO	1	12.8	.	71	.
Tam-101	HRW	KS	1	14.0	.	71	.
Tam-101	HRW	NE	1	15.2	.	64	.
Tam-101	HRW	OK	10	13.2	1.4	59	6

TABLE 7. AVERAGE HARDNESS AND PROTEIN OF ALL SAMPLES FOR EACH VARIETY.

VARIETY	CLASS	STATE	N	PROTEIN (12% MC)		HARDNESS	
				MEAN	STD.	MEAN	STD.
Tam-105	HRW	CO	1	11.7	.	84	.
Tam-105	HRW	KS	1	12.7	.	70	.
Tam-105	HRW	NE	2	12.0	0.6	70	1
Tam-105	HRW	OK	1	12.1	.	68	.
Tam-107	HRW	CO	1	12.0	.	85	.
Tam-107	HRW	KS	19	12.8	1.0	80	13
Tam-107	HRW	MO	4	12.6	1.2	86	5
Tam-107	HRW	NE	11	13.7	1.1	78	8
Tam-107	HRW	OK	1	11.7	.	68	.
Tam-107-Dryland	HRW	KS	3	13.1	1.1	76	5
Tam-107-Irrigated	HRW	KS	4	12.7	1.1	65	12
Tam-108	HRW	CO	1	11.6	.	75	.
Tam-108	HRW	KS	7	13.0	1.3	53	15
Tam-108	HRW	MO	1	10.2	.	40	.
Tam-108	HRW	NE	1	10.9	.	44	.
Tam-108	HRW	OK	3	12.4	0.8	52	6
Tam-108-Dryland	HRW	KS	1	11.6	.	46	.
Tam-108-Irrigated	HRW	KS	3	12.9	1.8	45	6
Tam-200	HRW	CO	1	11.7	.	85	.
Tam-200	HRW	KS	8	13.8	1.4	59	10
Tam-200	HRW	NE	7	13.7	1.4	61	9
Tam-200	HRW	OK	5	13.5	1.2	62	8
Tam-200-Dryland	HRW	KS	3	13.7	1.3	58	8
Tam-200-Irrigated	HRW	KS	4	13.3	1.5	50	5
Tam-200-Irrigated	HRW	OK	1	12.8	.	58	.
Telemark	HRS	MN	5	16.7	0.9	84	7
Telemark	HRS	ND	1	15.2	.	87	.
Terra-152	SRW	KS	1	11.5	.	62	.
Terra-201	SRW	KS	1	11.8	.	23	.
Terra-201-Exp	SRW	KS	1	12.4	.	29	.
Terra-HR150	SRW	KS	2	13.1	0.8	60	1
Terra-HR151	SRW	KS	2	12.1	0.7	54	6
Terra-HR152-Exp	SRW	KS	1	11.2	.	61	.
Terra-SR86	SRW	KS	2	11.6	0.1	29	3
Terra-SR87	SRW	KS	2	11.7	0.3	19	5
Thunderbird	HRW	CO	1	12.6	.	74	.
Thunderbird	HRW	KS	13	14.7	1.3	71	5
Thunderbird	HRW	MN	2	14.2	3.4	69	3
Thunderbird	HRW	NE	8	14.8	0.8	69	6
Thunderbird	HRW	OK	3	13.6	0.1	76	13
Thunderbird-Dryland	HRW	KS	3	14.6	1.5	78	5
Thunderbird-Irrigated	HRW	KS	3	13.1	0.6	67	8
Tiber	HRW	MT	1	16.8	.	55	.
Titan	SRW	OH	3	11.2	0.0	25	8
Trailblazer	HRW	CO	1	12.7	.	90	.
Trailblazer	HRW	KS	2	13.6	0.2	69	2
Trailblazer	HRW	NE	2	14.6	1.6	73	4
Trailblazer	HRW	OK	1	12.8	.	78	.
Tres	Club	ID	2	9.9	0.9	23	13



TABLE 7. AVERAGE HARDNESS AND PROTEIN OF ALL SAMPLES FOR EACH VARIETY.

VARIETY	CLASS	STATE	N	PROTEIN (12% MC)		HARDNESS	
				MEAN	STD.	MEAN	STD.
Tres	Club	OR	5	9.8	1.4	31	5
Tres	Club	WA	26	11.0	1.3	26	6
Tres-Crew	Mix	WA	3	11.1	0.2	29	4
Triumph	HRW	KS	1	13.8	.	63	.
Triumph	HRW	OK	7	13.2	0.8	57	9
Triumph-64	HRW	KS	5	15.0	1.6	58	9
Tut-Dryland	HRW	KS	2	15.3	1.8	79	1
Twain	SRW	KS	1	12.8	.	25	.
Tyler	SRW	OH	6	11.1	1.0	24	3
UC839	HRS	CA	5	12.0	1.0	78	10
UC842	HRS	CA	5	12.7	1.3	84	2
UC849	HWS	CA	5	12.6	1.6	94	8
UC850	Club	CA	5	11.2	1.8	44	7
UC851	HWS	CA	5	11.4	1.8	91	9
VC084077		WA	4	11.5	1.3	21	7
Vance	HRS	MN	6	16.6	1.6	81	7
Vance	HRS	ND	5	16.9	1.7	87	7
Victory	HRW	CO	1	13.1	.	96	.
Victory	HRW	KS	23	14.0	1.5	64	14
Victory	HRW	NE	5	14.3	0.7	66	5
Victory	HRW	OK	1	12.8	.	72	.
Victory-Dryland	HRW	KS	1	13.1	.	68	.
Victory-Irrigated	HRW	KS	4	13.6	1.3	62	9
Vona	HRW	NE	5	14.6	1.8	51	5
Vona	HRW	OK	1	12.1	.	54	.
W83-256	HRW	OK	1	12.1	.	54	.
W84-279	HRW	OK	1	12.8	.	75	.
WA7431		WA	4	10.7	1.9	26	5
WA7529		WA	3	10.5	1.9	25	7
WA7627		WA	3	12.1	1.4	32	7
Waco	HRW	CO	1	12.6	.	85	.
Waco	HRW	KS	1	14.0	.	73	.
Waco	HRW	NE	1	16.1	.	83	.
Waco	HRW	OK	1	13.5	.	70	.
Waldron	HRS	ND	2	14.0	0.1	93	1
Waverly	SWW	ID	1	10.0	.	30	.
Waverly	SWW	WA	1	14.8	.	32	.
Waverly-Hill-81	Mix	ID	1	11.7	.	21	.
Westbred-906R	HRS	OR	2	15.4	0.6	81	8
Weston	HRW	MT	2	14.1	1.0	57	3
Wheaton	HRS	MN	16	15.4	1.4	81	7
White-130		CA	1	13.6	.	64	.
Winoka	HRW	MT	2	13.6	1.5	76	3
YR-Hi		CA	1	14.1	.	75	.
Yecora-Rojo	HRS	CA	5	11.8	2.5	82	5
Yecora-Rojo	HRW	CA	9	13.3	1.0	76	6
Yecora-Rojo-87W	HRW	CA	5	11.7	2.1	86	14
Yolo	HRS	CA	5	10.4	1.9	88	7
Yolo	HRW	CA	3	9.9	0.3	73	5

TABLE 8. AVERAGE HARDNESS AND PROTEIN OF ALL  
'89 SAMPLES, BY CLASS WITHIN STATE.

STATE	CLASS	N	PROTEIN (12% MC)		HARDNESS	
			MEAN	STD.	MEAN	STD.
CA	Club	5	11.2	1.8	44	7
CA	HWW	8	11.8	1.8	67	11
CA		2	13.8	0.4	70	8
CA	HRW	26	12.3	1.7	78	9
CA	HRS	46	11.6	1.8	83	9
CA	HWS	10	12.0	1.7	92	8
CO	HWW	1	12.4	.	77	.
CO	HRW	35	12.5	0.7	83	9
ID	Mix	2	11.0	0.9	23	3
ID	Club	2	9.9	0.9	23	13
ID	SWW	52	10.7	0.9	25	6
KS	SWW	1	13.4	.	22	.
KS	SRW	33	12.0	0.9	31	16
KS	HWW	13	13.9	1.4	62	6
KS		2	11.9	0.7	63	1
KS	HRW	534	14.0	1.6	65	11
KS	Mix	3	12.2	0.7	68	20
MI	SRW	5	11.0	0.7	18	3
MI		1	10.8	.	23	.
MI	SWW	36	10.9	0.7	26	5
MN	HRW	8	14.6	2.4	75	6
MN	Mix	2	16.4	1.6	84	10
MN	HRS	110	16.0	1.4	88	9
MN		1	17.4	.	96	.
MO		2	12.0	0.1	19	2
MO	SRW	31	11.4	1.2	23	7
MO	Mix	1	11.3	.	62	.
MO	HRW	5	12.2	1.5	77	21
MS	SWW	3	11.5	0.3	28	6
MT	HRW	20	13.2	1.6	68	9
ND	HRS	155	16.5	1.5	96	9
NE	HRW	135	13.8	1.5	68	10
NE	HWW	1	14.1	.	78	.
OH	Mix	2	11.2	0.2	17	1
OH	SRW	49	10.5	0.7	21	6
OH		1	10.1	.	23	.

**TABLE 8. AVERAGE HARDNESS AND PROTEIN OF ALL  
'89 SAMPLES, BY CLASS WITHIN STATE.**

STATE	CLASS	N	PROTEIN (12% MC)		HARDNESS	
			MEAN	STD.	MEAN	STD.
OK	HRW	229	13.0	1.4	59	12
OK	HWW	1	12.2	.	61	.
OK		2	12.0	1.3	67	1
OK	Mix	1	14.6	.	94	.
OR	Club	6	9.8	1.3	31	4
OR	SWW	29	10.2	0.9	31	7
OR	HRW	11	11.0	0.7	78	11
OR	HRS	6	14.3	1.5	81	6
PA	SRW	1	11.5	.	23	.
SD	HRS	22	13.9	1.2	84	15
WA	Mix	19	11.2	0.9	23	5
WA	Club	31	10.9	1.2	25	5
WA	SWW	116	11.4	1.3	25	6
WA		15	11.2	1.5	26	7
WA	SRW	1	10.6	.	28	.











